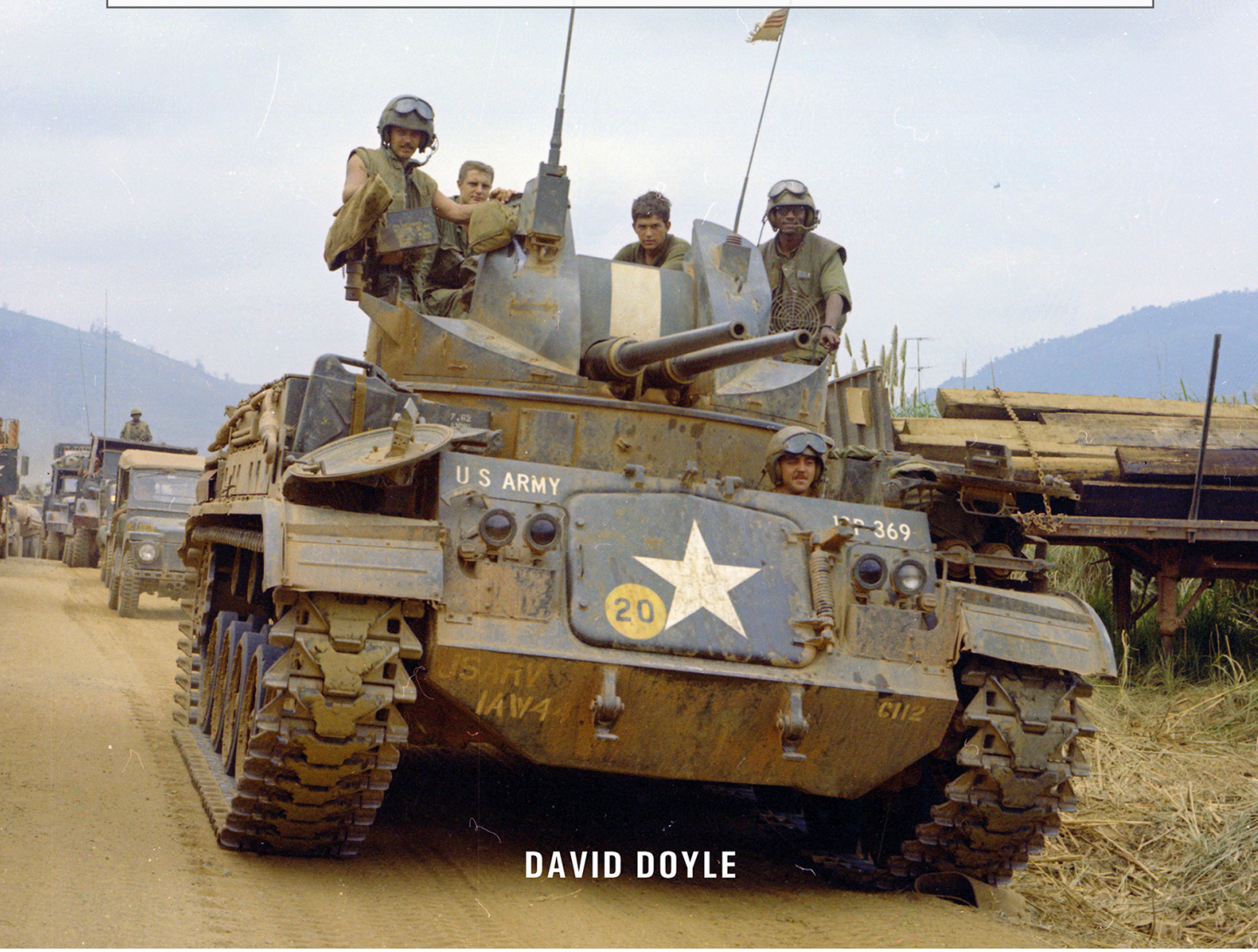
LEGENDS OF WARFARE

GROUND

M42 Duster

Self-Propelled Anti-Aircraft Vehicle



DAVID DOYLE

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Self-Propelled Anti-Aircraft Vehicle

DAVID DOYLE

SCHIFFER MILITARY
4880 Lower Valley Road Atglen, PA 19310

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Introduction

In World War II, the US armed forces recognized that it was becoming increasingly critical to provide its ground forces with mobile forward antiaircraft defenses. The M2-family half-track was put to use mounting a variety of antiaircraft weapons, from multiple .50-caliber machine gun suites to the 40 mm Bofors automatic cannon. Photographed at US Army Base F, Finschhafen, New Guinea, on November 9, 1944, this vehicle was called the M15 Special. It was an M15 multiple-gun motor carriage with an M1 40 mm cannon installed in place of the M15's usual suite of one 37 mm gun and two .50-caliber machine guns. The M15 Special saw use in particular in the US invasion of the Philippines. *Patton Museum*

Tactical airpower truly came into its own during World War II. Formations of men and equipment on the ground were proven to be highly vulnerable to nimble, bomb-laden, strafing aircraft.

Engineers and strategists on all sides struggled to develop mobile antiaircraft weaponry to combat this threat. One of the most powerful, reliable, and feared weapons was the Bofors 40 mm automatic cannon. Developed by the Swedish firm AB Bofors, this weapon was used both by the Allies and the Axis during World War II, a testament to its sound design.

The US Navy used many different mountings for the Bofors during World War II, most notably the quadruple mounts that covered battleships, cruisers, and aircraft carriers. The US Army used the Bofors during World War II as well, typically on a towed single-barrel mounting called the "40 mm Automatic Gun M1." As the war wore on, the Army both officially and unofficially tried various mountings of the weapon on half-track chassis. Late in the war the twin-cannon M19 gun motor carriage, a self-propelled vehicle based on the chassis components of the M24 Chaffee light tank, was developed, but this did not see field use during World War II.

With the outbreak of the Korean War, the M19 saw considerable service as part of several antiaircraft artillery (AAA) units, seeing most of their action in ground supporting roles against enemy personnel and emplacements.

However, by that time the US Army had begun efforts to modernize its tactical vehicle fleet, as well as standardize components. The M24 light tank would be replaced by the M41, known as the T41 during its development stage. As with prior systems, the chassis of the T41 would become the basis for a family of vehicles.

Under the Industrial Mobilization Planning Program, the Ordnance Corps, in 1950, designated the Cadillac Division, of the General Motors Corporation, as the Engineering Design Agency for the Light Gun Tank and Allied Combat Vehicles family.

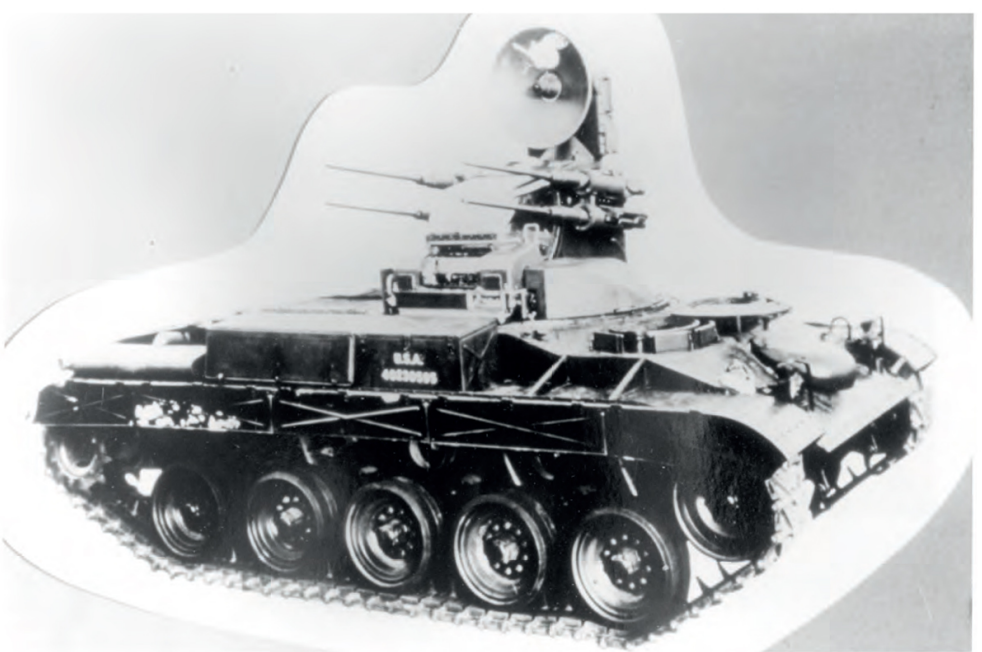
In November 1950, the Ordnance Committee approved the military characteristics of a new type of self-propelled, twin 40 mm self-propelled gun, the T141, which was to be an interim vehicle. The T141, operated by a crew of four men, utilized the chassis components of the T41. The Army envisioned that the interim vehicle would quickly be superseded by the ultimate vehicle, the T141E1, and its companion vehicle, the T53 fire control vehicle with 40 mm gun.

A March 18, 1951, press release stated this:

> Three months ahead of schedule, Cadillac Division of General Motors has started production on the T-41 [*sic*] in a former bomber plant in Cleveland.
>
> Brig. Gen. David J. Crawford, commandant of the Detroit tank-automotive center, announced this week that five other vehicles using the same chassis and suspension system, 500-horsepower Continental engine and GM Allison transmission will be in production by Dec. 31, 1951.
>
> Besides making the new tank, some features of which are still classified information, Cadillac will turn out a similar vehicle for anti-aircraft use. It will be armed with twin 40 mm Bofors guns.

Developed during World War II, the M19 gun motor carriage was an early US attempt to mount an antiaircraft weapon system on a fully tracked and armored vehicle. Although available by April 1945, VE-Day in May and VJ-Day in August resulted in only 300 units being delivered. Based on a modified M24 Chaffee light tank chassis with the engine moved to the center of the vehicle, the M19 featured an open, lightly armored gun mount at the rear with twin 40 mm automatic cannons. Since the M42 was considered self-propelled artillery, the gun tub was officially referred to as a mount, not a turret. Too late to see service in World War II, M19s were employed in combat in the Korean War. This is a track of 3rd AAA attached to the 3rd Infantry Division. Guns are pointed up in air defensive posture, although no clips of ammo are observed. The gunner has an M24C reflex site in place of a speed ring sight, and the vehicle has a 1-ton Ben Hur–type trailer in tow. *Air Defense Artillery Museum*

Assembled in 1951, the T100, *shown here*, was the initial attempt at creating a new multiple gun motor carriage on the chassis of the next generation of light tanks, thereby replacing the M19. Armed with four experimental T17E5 .60-caliber machine guns, the pilot vehicle was built on the chassis of a pilot T37 light tank. The T37 was developed at the same time as the T41, and there were numerous similarities in the chassis. The T17E5 guns were not successful, which, along with a desire for heavier weaponry, led to the T100 project being discontinued. *Patton Museum*



CHAPTER 1

Production

Quietly, the Cadillac Motor Car Division, General Motors Corporation, was awarded contract DA-20-089-ORD-2931 to serve as the design and production agency for the T141.

On January 17, 1951, the Secretary of the Army approved a letter order for $106,000,000 to American Car & Foundry (ACF) to produce the T141 at its Berwick, Pennsylvania, plant. This was followed by formal contract DA-36-034-ORD-91, issued by the Philadelphia Ordnance District, for $53,000,000. The remaining funds from the letter order were to be spread over subsequent years' production.

On March 27, 1951, the Cadillac Motor Car Division, General Motors Corporation, publicly announced it had been awarded a contract to produce the T141 at its Cleveland Tank Plant alongside the T41E1 light tank.

The strategy of having multiple producers of defense equipment, which was strongly advocated by Secretary of Defense George C. Marshall, was outlined on September 19, 1951, by his successor Robert A. Lovett, to a House Appropriation subcommittee of a change in procurement strategy, stating the following:

> If you produce aircraft today and store them around the country, you have on your hands things which do not reflect the most modern aerodynamic designs or electronic equipment. That is equally true with respect to tanks in the sense that if you procure all the tanks the Army needs this year from one plant, then the lines are always full in that factory, and under the pressure to get those tanks you may be taking a model which does not incorporate all the most modern and desirable improvements, whereas, if you have multiple lines and spread the time longer, you can work the newer designs.

Not stated in that testimony but remarked elsewhere, the spreading of production had the additional added benefit of protecting production in the event of an enemy attack, either overt or by sabotage, on a facility, as well as making it possible to increase production levels at multiple plants if needed.

No doubt by virtue of already having the T41 in production, Cadillac was the first to deliver a complete vehicle, with the lead vehicle leaving the Cleveland assembly line in August 1951. The rear of the hull and its power train, including the Continental AOS-895-3 air-cooled engine and Allison CD-500-3 cross-drive transmission, as well as the suspension, were common to both the T41. The first ACF-produced T141 was accepted by Ordnance in April 1952.

As was the case with the T41 light tank (later standardized as the M41) and other equipment rushed into production when it was feared that the Korean War would escalate into a global conflict, testing of early-production vehicles revealed a variety of problems that had to be addressed through various modifications. A revised set of military characteristics were approved on September 9, 1953, at the Cleveland Tank Plant, calling for thirty-seven mandatory modifications, which would also be applied to previously produced vehicles.

One of the problems that had been identified was operating difficulties accompanying the use of 1½-inch side armor, leading to the conclusion in April 1953 that ¾-inch side armor should be adopted. Subsequent engineering studies and extensive tests on production techniques and modifications proved the feasibility of ½-inch side armor, which was the readopted and standardized.

Like the World War II–designed M19, the M42 was armed with dual automatic Bofors M2A1 40 mm antiaircraft cannon. At the muzzle of the guns of the early-production vehicles were conical flash suppressors, resembling those used on the 40 mm weapons in naval service. These would give way on later-production vehicles to three-prong-style flash suppressors, of which two types were produced.

Early-production vehicles could also be distinguished by the two doors between the driver's and commander's hatches on the upper surface of the hulls. When these doors were opened, the intent was that ammunition cans could be passed from the hull to the mount. Evidentially this feature was of little utility, since these doors were eliminated on later vehicles.

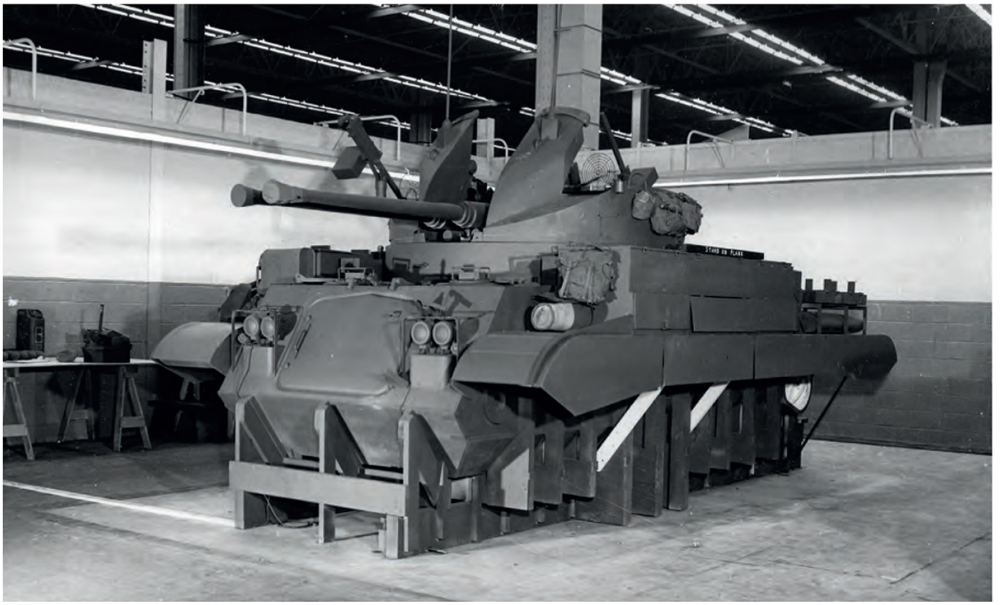
In July 1953, a number of changes were made in defense acquisitions. Fear of the Korean War becoming a global conflict had largely abated, a new administration was in the White House, and the new Secretary of Defense, Charles E. Wilson, felt that having parallel production at multiple plants was wasteful. Accordingly, many such contracts were terminated—among them the ACF contract to build T141s. Thus, production of the T141 in Berwick halted in December 1953, and production of the remaining vehicles on the contract were transferred to Cadillac. Production continued in Cleveland until December 1959. When production ceased, 3,700 T141/M42s had been built by American Car & Foundry and Cadillac.

On October 22, 1953, over two years after production began, the T141 at last lost its experimental "T" classification and was classified as Standard Type as the "Twin 40 mm Self-Propelled Gun M42," and its predecessor, the M19A1, was reclassified as Limited Standard Type.

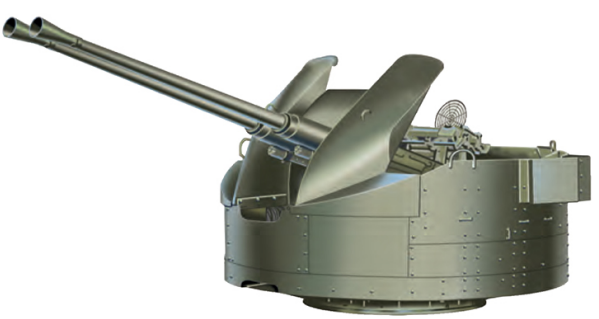
Following testing, the engine of the M42 was changed from the naturally aspirated AOS-895-3 to the fuel-injected AOSI-895-5, which improved both fuel economy and performance. The fuel-injected engine was introduced into M42 production, and in June 1956, vehicles so equipped were designated M42A1. The M42A1 was classified as Standard Type and the M42 as Limited Standard Type on February 2, 1956.

Attached to the side armor of the rotating 40 mm mount was a machine gun pintle. Originally, a .30-caliber M1919 machine gun was mounted there for close-in defense, but in later years a 7.62 mm M60, which began to be issued in 1959, replaced the M1919.

The next phase in the US fully tracked and armored antiaircraft system was the T141 project. Based on the chassis of the M41 Walker light tank, it moved the twin 40 mm mount farther forward on the hull. The fire of the T141's guns was originally intended to be directed remotely by a radar fire-control system. *General Motors LLC*



This May 10, 1951, photo of the T141 mockup indicates that there originally were, or were intended to be, three hinged doors below the stowage box on the left side of the vehicle and only one spare barrel. This feature was not present on the production M42, since two spare barrels were placed there. Knapsacks are secured to the gun mount and front of the stowage box, and two .30-caliber machine guns are on pintle mounts on the 40 mm gun mount. The barrel of a second .30-caliber machine gun is visible above gunner's position. Side mudguards are attached that require the flat-style front and rear fenders. Later models have tapered front and rear fenders since the side mud panels were abandoned. *TACOM LCMC History Office*

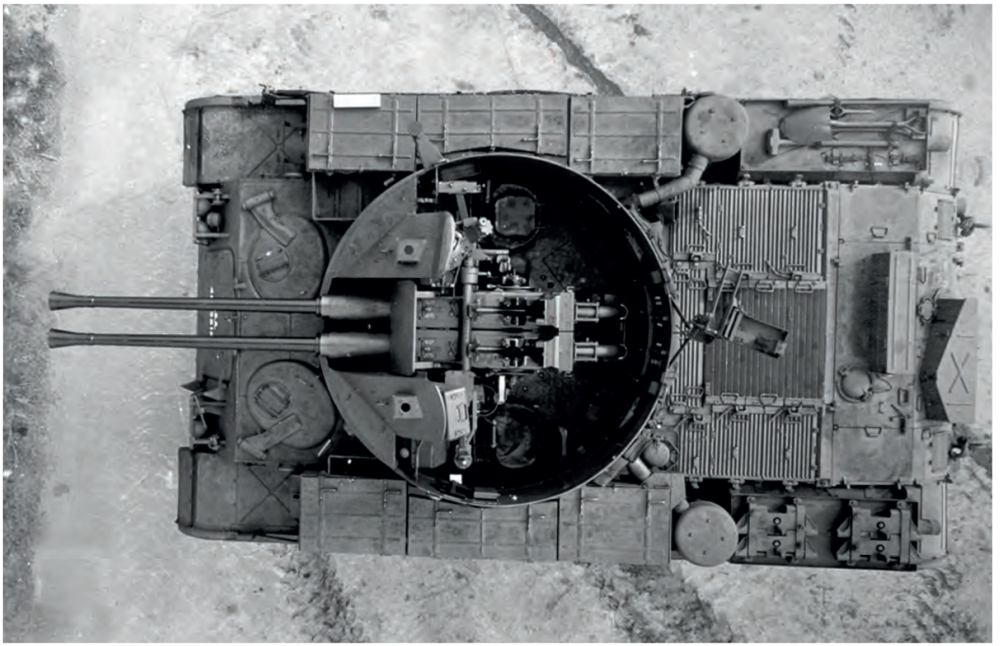


The gun mount of the M42 was very similar to that used on the earlier M19; both featured the M4E1 mount.

M42 ammunition storage capacity: 480 rounds
Sights: M38 computing sight, M27 azimuth sight, M24 optical sighting ring
Gun elevation: +89 degrees to –5 degrees manually; +87 degrees to –3 degrees hydraulically
Maximum elevation rate: 25 degrees per second
Turret traverse range: 360 degrees
Traverse rate: 40 degrees per second

T141, US Army registration number 40228157, is one of the vehicles seen here in the engineering area of the Cleveland Tank Plant. This T141 was armed with Bofors guns fitted with conical flash suppressors. Also visible is an M41 tank and several M41 turrets on stands. In the left background is an M4E1 mount on a stand.

T141, registration number 40228156, was photographed from overhead during trials at Aberdeen Proving Ground on November 28, 1951. The layout is similar to that of the standardized M42. Although hard to discern in this view, the T141s had two overhead doors on the roof of the driver's and squad leader's compartment. The joint where these doors met ran between the driver's and squad leader's hatches. In service, it was found that the doors were rarely used, and they were subsequently discontinued. *US Army Ordnance Museum*



Viewed from the left side, the forward positioning of the T141's gun mount is evident. Oil-bath air cleaners were externally mounted in front of the mufflers, which were on top of the rear of both fenders. At the rear of the 40 mm gun mount was a mount for an M1919A4 machine gun. The 40 mm guns wear conical flash suppressors. The side mudguards are attached to this vehicle. The T141 was standardized as the M42 twin 40 mm self-propelled gun on October 22, 1953. *Patton Museum*

Speed ring sights are mounted to the sides of the 40 mm guns of this T141. In this view of T141, registration number 40228156, the early rectangular front mudguards are clearly visible. *US Army Ordnance Museum*

A T141, marked with US Army registration number 40228158, is being put through trials on a dusty road to evaluate its performance. In addition to Cadillac Motor Car Division, ACF Industries also gained a contract to manufacture T141s, making its first deliveries in April 1952. *General Motors LLC*

General Data		
Model	**M42**	**M42A1**
Weight*	49,500 lbs.	49,500 lbs.
Maximum towed load	5,000 lbs.	5,000 lbs.
Length**	250.25	250.25
Width**	126 15/16	126 15/16
Height**	112.125	112.125
Track	102.5"	102.5"
Track width	21"	21"
Maximum speed	45 mph	45 mph
Fuel capacity	80 gal.	80 gal.
Range	100 miles	100 miles
Electrical	24 negative	24 negative
Transmission speeds	2	2
Turning radius feet	pivot	pivot

* Fighting weight
** Overall dimensions listed in inches. Guns facing forward.

Engine Data		
Model	**M42**	**M42A1**
Engine make/model	AOS-895-3	AOSI-895-5
Number of cylinders	opposed 6	opposed 6
Cubic inch displacement	895.9	895.9
Horsepower	500 @ 2,800 rpm	500 @ 2,800 rpm
Torque (ft./lbs.)	955 @ 2,400 rpm	955 @ 2,400 rpm
Governed speed (rpm)	2,800	2,800

A T141 poses next to an M41 light tank on the grounds of the Cleveland Tank Plant. Delivery of the vehicles to the US Army began in August 1951. While this example features the early rectangular mudguards, a simple triforked flash suppressor replaced the older conical version that was used on earlier examples of the T141. *ADA historian Paul Kopsick*

A T141 with later-style three-prong flash suppressors pauses in a field outside the Cleveland Tank Plant, which had an extensive, forested test area adjacent to it. The driver and the gunner are wearing light-colored helmets. The light-colored feature on the side of the gun mount appears to be a checklist or data sheet, taped in place. *General Motors LLC*

The twin 40 mm guns are elevated on this T141, likely the same one in the preceding photograph. Hooks are attached to the side of the ammunition compartment above the fender, for securing a tow cable. The tracks on these vehicles were the T91E3, of steel construction with replaceable rubber pads on the outside; there were seventy-five shoes per track assembly. *General Motors LLC*

The mount is traversed to the rear on this M42 twin 40 mm self-propelled gun. Mufflers with tailpipes are near the rear of each fender. To the fronts of the mufflers are the drum-shaped oil-bath air cleaners. A lifting ring was available inboard of each taillight assembly. A mount for a pintle hook is between the two lugs for tow hooks on the lower rear plate of the hull. *General Motors LLC*

An M42 is under construction to the right on the final-assembly line at the Cadillac Motor Car Division of the Cleveland Tank Plant. This vehicle was sharing the assembly line with a number of M41 light tanks. The 40 mm guns, complete with flash suppressors, have been mounted. While the vehicle has angular front fenders, it is equipped with the large upper hatch opening, as evidenced by the hinges visible above the front door. *Patton Museum*

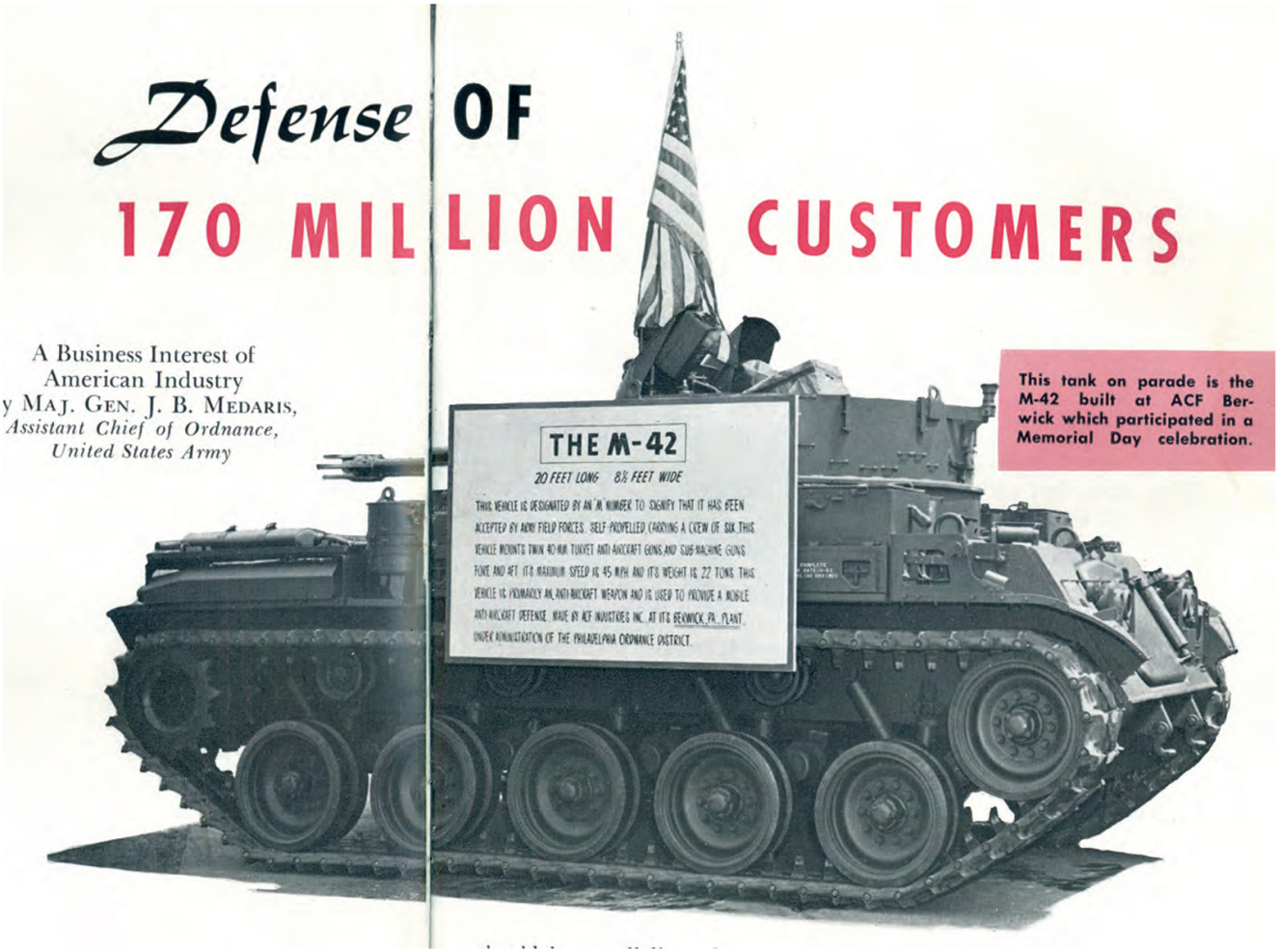
Representatives of management and labor at the Cleveland Tank Plant shake hands in front of a nearly completed M42 Duster, with more Dusters lined up to the rear. Late-type, three-prong flash suppressors are mounted on the 40 mm gun muzzles of the first and second vehicles in line. This vehicle does not have the large upper hatch in the hull; hence the large hinges on the front plate are omitted. *General Motors LLC*

A newly minted M42, registration number 12H421, exhibits fresh paint and bright metal on its mufflers below the raised stowage racks over the rears of the fenders. The bare metal muffler for the auxiliary power unit (APU) on the pioneer tool rack on the right rear fender is similarly pristine. With use, these mufflers would soon become rusted and discolored from exhaust heat and exposure to the elements. The twin Bofors M2A1 40 mm guns were housed in a gun mount designated the M4E1. *Patton Museum*

The test vehicle is approaching a series of low obstacles on the Cleveland Tank Plant testing ground. A close examination of the photo reveals that the number "1883" has been chalked on the front of the radio-antenna mount on the gun mount. *General Motors LLC*

An M42 Duster in factory-fresh paint is parked under trees during testing. No markings are visible on the vehicle. The late-type, angled front mudguards are present, and the vehicle is not equipped with the large upper hatch. *General Motors LLC*

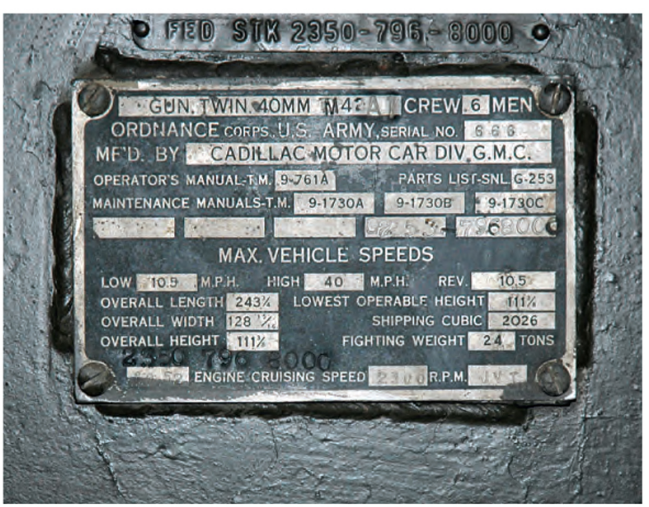
The M42 marked "1883" on the left antenna mount has stopped next to the wreckage of a brick building. Many unpainted, bright-metal screws, washers, and nuts are visible on the fender and the ammunition compartment. *General Motors LLC*


Defense OF
170 MILLION CUSTOMERS
A Business Interest of
American Industry
y Maj. Gen. J. B. Medaris,
Assistant Chief of Ordnance,
United States Army
THE M-42
20 FEET LONG 8½ FEET WIDE
THIS VEHICLE IS DESIGNATED BY AN 'M' NUMBER TO SIGNIFY THAT IT HAS BEEN ACCEPTED BY ARMY FIELD FORCES. SELF-PROPELLED CARRYING A CREW OF SIX THIS VEHICLE MOUNTS TWIN 40 MM TURRET ANTI-AIRCRAFT GUNS AND CAL MACHINE GUNS FORE AND AFT. ITS MAXIMUM SPEED IS 45 MPH AND ITS WEIGHT IS 22 TONS. THIS VEHICLE IS PRIMARILY AN ANTI-AIRCRAFT WEAPON AND IS USED TO PROVIDE A MOBILE ANTI-AIRCRAFT DEFENSE. MADE BY ACF INDUSTRIES INC. AT ITS BERWICK, PA. PLANT UNDER ADMINISTRATION OF THE PHILADELPHIA ORDNANCE DISTRICT.
This tank on parade is the M-42 built at ACF Berwick which participated in a Memorial Day celebration.

A photograph of an M42 manufactured at the American Car & Foundry plant at Berwick, Pennsylvania, was featured in an article titled "In Defense of 170 Million Customers" in the January–February 1956 issue of the magazine *Wheels*, published by ACF. The photograph was taken during the "Berwick on Parade" event in 1953 and was the first public showing of the Duster.

The gun mount of this M42, registration number 12B793, is traversed to the rear, and the muzzles of the 40 mm guns are fitted with the conical flash suppressors used early in the production of the M42s. The gun mount could traverse 360 degrees in nine seconds, and the guns had a maximum elevation of 87 degrees under manual control and 85 degrees under powered control. Combined, the two guns could fire 240 rounds per minute. The rack over the muffler on the left rear fender held four spare track links. The two boxes on the rear deck held an M20 3.5-inch antitank rocket launcher and four rockets. These boxes were discontinued on later-production M42s. *National Archives*

The earliest Dusters were T141 vehicles. This unit was built by the American Car & Foundry Company. The data plate, attached to the inside hull wall to the left of the driver, provided manufacturer information, dimensional data, and a list of applicable manuals.



Later vehicles were delivered as M42s, but both the T141 and M42 were later upgraded to M42A1 status with the installation of a fuel-injected engine rather than the carbureted engines, which were the original engines. This M42 data plate shows that the vehicle was built by the Cadillac Motor Car Division of the General Motors Corporation.

This photo and the following series of color photos were taken during Armor and Engineer Board testing of a Duster, registration number 40228252, at Fort Knox, Kentucky. The vehicle is heavily mud spattered, and tape has been wrapped around the 40 mm gun muzzles and the recoil mechanisms, to keep out mud and dust. *Kevin Emdee collection*

The Duster is negotiating a steep grade at Fort Knox. The vehicle was able to drive up a slope of a maximum of 60 percent, or 31 degrees. *Kevin Emdee collection*

An area of very muddy ground provides the M42 with an opportunity to display its performance on soft and mucky terrain. *Kevin Emdee collection*

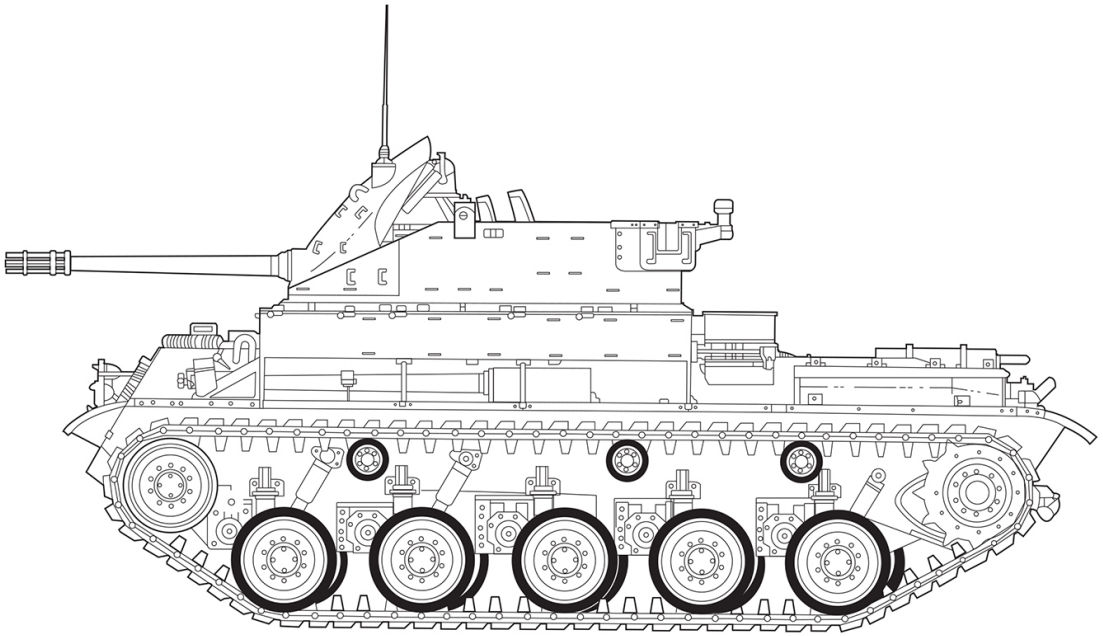
The same Duster is observed from the right rear. It appears to have become mired, with the front of the track butted up against an embankment. A cover is wrapped around the receivers and autoloaders of the 40 mm guns. *Kevin Emdee collection*

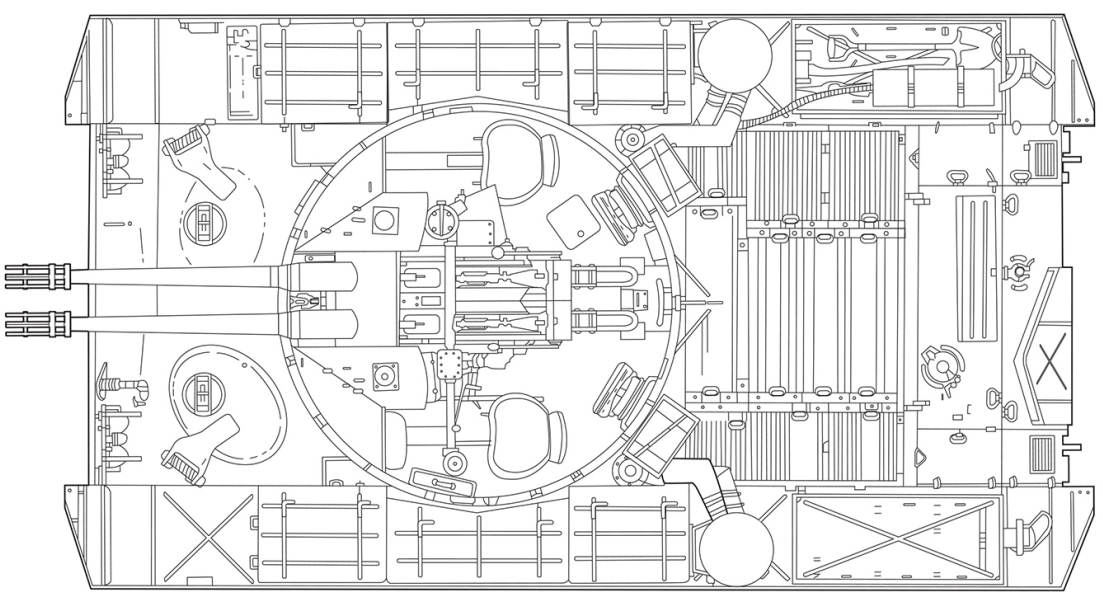
The tracks of the Duster fling up mud as the driver attempts to drive the vehicle out of the mudhole. The view is from the right rear of the vehicle. *Kevin Emdee collection*

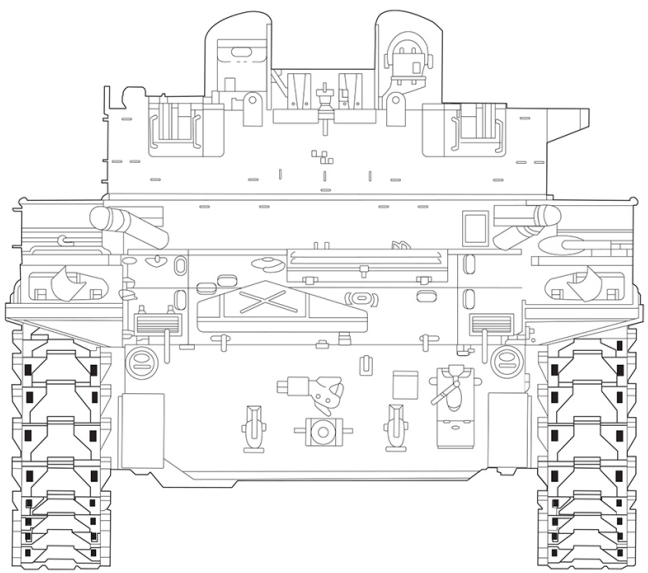
The Duster is viewed from the right while operating in the muddy ground at Fort Knox. The driver's hatch is open. *Kevin Emdee collection*

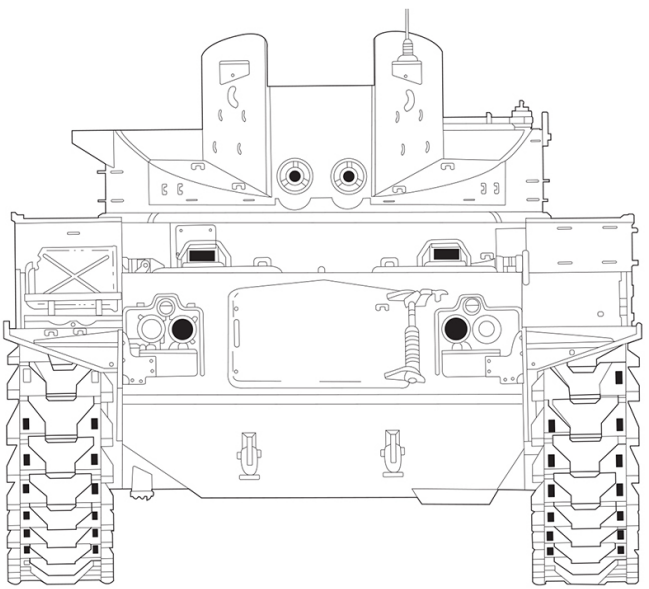
In a final view of the Duster with registration number 40228252 during tests by the Armor and Engineer Board at Fort Knox, the vehicle appears to have become thoroughly mired, possibly to the point of requiring a recovery vehicle to extricate it. *Kevin Emdee collection*

Registration number 12D320 is painted in white on the ammunition compartment of this late-production M42, photographed on October 10, 1961, at Detroit Arsenal. Unit markings on the bow are "2A-18F" and "H-16." A triangular red, yellow, and blue US Armored device is on the gun mount. The black finish of the Bofors is apparent, as are the reinforced three-prong flash suppressors. *TACOM LCMC History Office*









CHAPTER 2

Field Use

A posed photograph taken August 1, 1954, at Fort Benning, Georgia, illustrates the newly delivered M42 with Army registration number 12D089, assigned to the 256th AAA AW BN, 47th Infantry Division. The Signal Corps caption states that the battalion would have thirty-one of the new vehicles by the end of the month. The vehicle's "US" is painted in white on the side of the right-front 40 mm ammunition storage compartment. The white object to the front of that number is the squad leader's periscope on his open hatch cover. The side stowage lockers are equipped with padlocks. Veterans report that the use of these padlocks was especially important in Vietnam to prevent pilfering by the civilian populace. *Rock Island Arsenal Museum*

The Dusters were typically deployed in pairs, with four Dusters, referred to as "tracks," composing a section. Two sections (1st and 2nd) comprised a platoon of eight, and two platoons (1st and 2nd) comprised the battery of sixteen Dusters. There were four batteries (A, B, C, and D), plus spare tracks under the commanding headquarters battery.

The M42A1 was a crew-served weapon and required constant maintenance and support from the rest of the battalion. Each battalion had four firing batteries: A, B, C, and D, with a headquarters administration and support battery HHB. Each firing battery consisted of sixteen Dusters split between two platoons, with four sections of two. Typically, the track number is stenciled, starting with a single alpha character representing the battery, followed by a three-digit (sometimes only two-digit) number starting with "1" for first platoon and "2" for second platoon. The battery would be commanded by a captain, a lieutenant would command a platoon, a senior NCO would command a section, and a sergeant would command each track. The track's crew, optimally six men, would include a commander, a driver, a gunner, an azimuth tracker, and two cannoneers. The guns are controlled by hand cranks, left side for gun elevation and the right side for gun direction.

The M42 was initially deployed stateside and in many international locations. However, the vehicle was soon considered by many to be outdated and unable to support ground troops in the new age of jet aircraft. Most M42s were relegated to National Guard units in Delaware, Florida, New Mexico, Michigan, Ohio, and other states.

As the US adjusted to the different style of enemy tactics observed early on in Vietnam, it became evident that US forces needed mobile weapons with high rates of fire. The US Army just happened to have a large number of such a weapon, the M42A1 Duster, sitting in a number of National Guard units throughout the country. The call went out, and the M42s were quickly sent to Ft. Bliss, Texas, where three air defense artillery (ADA) battalions were being reactivated: 1/44th, 5/2nd, and 4/60th. Several training battalions were formed to train air defense artillery crewmen with the MOS of 13Fxx and later 16Fxx.

The men were cross-trained on the M55 Quad .50-caliber gun mount because four batteries of Quad-50s were also to be deployed with the Duster battalions. Together these teams would provide a wide range of offensive and defensive support to all branches and units.

As the US involvement in Vietnam escalated, three Duster battalions were deployed between 1966 and 1971. Arriving in November 1966, 1st Bn, 44th ADA, was the first to arrive and was deployed in the North and was attached to the 3rd Marines (ICORP, IFFV). They would be deactivated in December 1971. The 5th Bn, 2nd ADA, was the second Duster unit in Vietnam, arriving in late November 1966 and being deployed in the South (III CORP, IIFFV). They were deactivated in June 1971. The 4th Bn, 60th ADA, arrived last, in March 1967, and deployed in the Central Highlands (IICORP, IFFV) until deactivated in December 1971. They covered the largest area and often sent elements to support actions in the North and South.

It is a testament to the officers, noncommissioned officers (NCOs), and enlisted men that they could adapt the "obsolete" M42A1 to perform under any environment encountered in Vietnam. At any one time, there were fewer than 200 M42A1 Dusters in country. The photos in this book demonstrate how the strengths of the M42 were maximized and the deficiencies were minimized.

The Duster battalions did initially train and deploy as a battalion, arriving on transport ships and disembarking on landing crafts just like in the movies. After a man's year tour of duty was over, he would DEROS (Date Eligible for Return from Overseas Service) and be reassigned stateside or leave the service completely, sometimes after just coming from a battle where his buddies were still fighting.

Most Vietnam veterans never saw a Duster, but the ones who did remember them well, often crediting them with saving their lives in an ambush, ground assault, or firefight. The North Vietnamese feared the Duster and called them "Fire Dragons." The motto of the Duster men was "First to Fire . . . Last to Leave!"

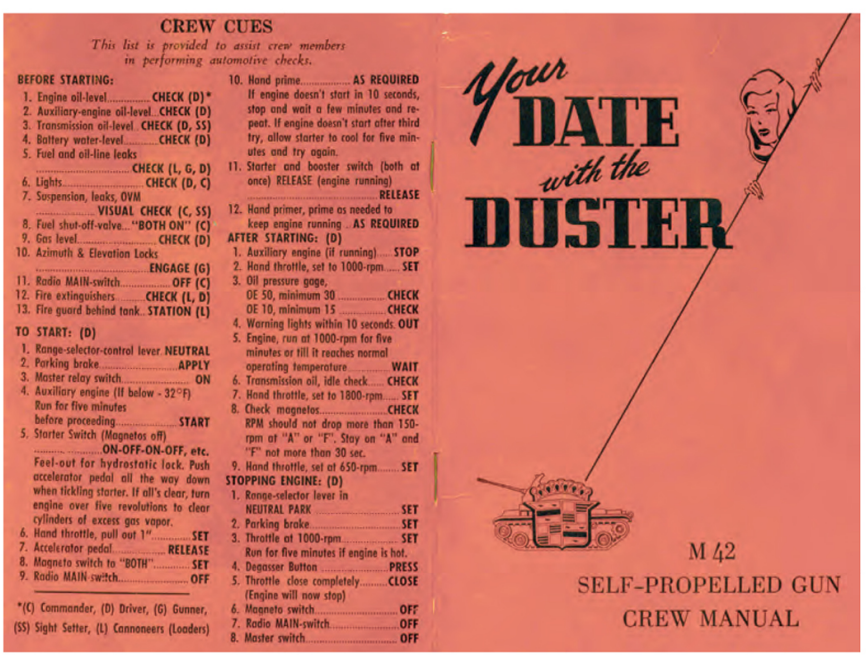
This new M42 of the 29th AAA Automatic Weapons Group, 1st Cavalry Division, was exhibited during the Organization Day celebration at Camp Chitose #1, Hokkaido, Japan, on June 8, 1954. The vehicle is fully stowed, including, as indicated by the warning placard supported by the shackles, its ammunition load. The M1919A4 is visible at the top of the mount. *National Archives*

A column of newly arrived M42s move from Hokkaido, Japan, to their new home, Camp Haugen, near Hachinohe, on August 30, 1954. The vehicles belong to the 29th AAA AW Battalion, attached to the 1st Cavalry Division. *National Archives*

This M42, registration number 12B871, freshly arrived in Germany in the mid-1950s, has the barrels, recuperators, and flash suppressors of the 40 mm guns wrapped in paper secured with Olive Drab tape for shipment. Corrosion has started to set in around the hull and the oil-bath air cleaners. Stenciling is present on the equipment and ammunition lockers. On the transmission cover at the upper rear of the hull is the transmission oil filler cover. The louvers on either side of the transmission cover are part of the battery access doors. The exhaust muffler for the auxiliary generator "Little Joe" is visible above the right rear engine exhaust muffler. *Verne Kindschi*

Another view of M42, registration number 12B871, shows the multiple stencils on the ammunition and equipment lockers. In addition to those indicating the locations of the standard equipment such as tow cable, combat packs, and asbestos mittens, there are stencils noting the maintenance history of the vehicle. The gunsight accessory chest is in place to the rear of the gunner's shield. The clean nature of the gun mount indicates that the canvas cover had just been removed. *Verne Kindschi*

While the cannoneers tend to the 40 mm guns, a crewman is at the ready on the .30-caliber machine gun. This M42, registration number 12D080, with the 50th AAA Gun Battery in South Korea, was photographed on October 27, 1956. The wire tow rope secured to the ammunition locker was standard equipment for M42s. Padlocks are attached to several of the T-handles on the equipment lockers below the ammo lockers. The two brackets below the tow rope were for a disassembled cleaning rod, which is not present. *National Archives*



CREW CUES

This list is provided to assist crew members in performing automotive checks.

BEFORE STARTING:

1. Engine oil-level..... CHECK (D)*
2. Auxiliary-engine oil-level..CHECK (D)
3. Transmission oil-level..CHECK (D, SS)
4. Battery water-level..... CHECK (D)
5. Fuel and oil-line leaks ..... CHECK (L, G, D)
6. Lights..... CHECK (D, C)
7. Suspension, leaks, OVM ..... VISUAL CHECK (C, SS)
8. Fuel shut-off-valve..."BOTH ON" (C)
9. Gas level..... CHECK (D)
10. Azimuth & Elevation Locks ..... ENGAGE (G)
11. Radio MAIN-switch..... OFF (C)
12. Fire extinguishers..... CHECK (L, D)
13. Fire guard behind tank..STATION (L)

TO START: (D)

1. Range-selector-control lever..NEUTRAL
2. Parking brake..... APPLY
3. Master relay switch..... ON
4. Auxiliary engine (If below - 32°F) Run for five minutes before proceeding..... START
5. Starter Switch (Magnetos off) ..... ON-OFF-ON-OFF, etc. Feel-out for hydrostatic lock. Push accelerator pedal all the way down when tickling starter. If all's clear, turn engine over five revolutions to clear cylinders of excess gas vapor.
6. Hand throttle, pull out 1"..... SET
7. Accelerator pedal..... RELEASE
8. Magneto switch to "BOTH"..... SET
9. Radio MAIN-switch..... OFF

*(C) Commander, (D) Driver, (G) Gunner, (SS) Sight Setter, (L) Cannoneers (Loaders)

10. Hand prime..... AS REQUIRED If engine doesn't start in 10 seconds, stop and wait a few minutes and repeat. If engine doesn't start after third try, allow starter to cool for five minutes and try again.
11. Starter and booster switch (both at once) RELEASE (engine running) ..... RELEASE
12. Hand primer, prime as needed to keep engine running ..AS REQUIRED

AFTER STARTING: (D)

1. Auxiliary engine (if running)..... STOP
2. Hand throttle, set to 1000-rpm..... SET
3. Oil pressure gage, OE 50, minimum 30 ..... CHECK OE 10, minimum 15 ..... CHECK
4. Warning lights within 10 seconds OUT
5. Engine, run at 1000-rpm for five minutes or till it reaches normal operating temperature..... WAIT
6. Transmission oil, idle check..... CHECK
7. Hand throttle, set to 1800-rpm..... SET
8. Check magnetos..... CHECK RPM should not drop more than 150-rpm at "A" or "F". Stay on "A" and "F" not more than 30 sec.
9. Hand throttle, set at 650-rpm..... SET

STOPPING ENGINE: (D)

1. Range-selector lever in NEUTRAL PARK..... SET
2. Parking brake..... SET
3. Throttle at 1000-rpm..... SET Run for five minutes if engine is hot.
4. Degasser Button ..... PRESS
5. Throttle close completely..... CLOSE (Engine will now stop)
6. Magneto switch..... OFF
7. Radio MAIN-switch..... OFF
8. Master switch..... OFF

Your **DATE** *with the* **DUSTER**

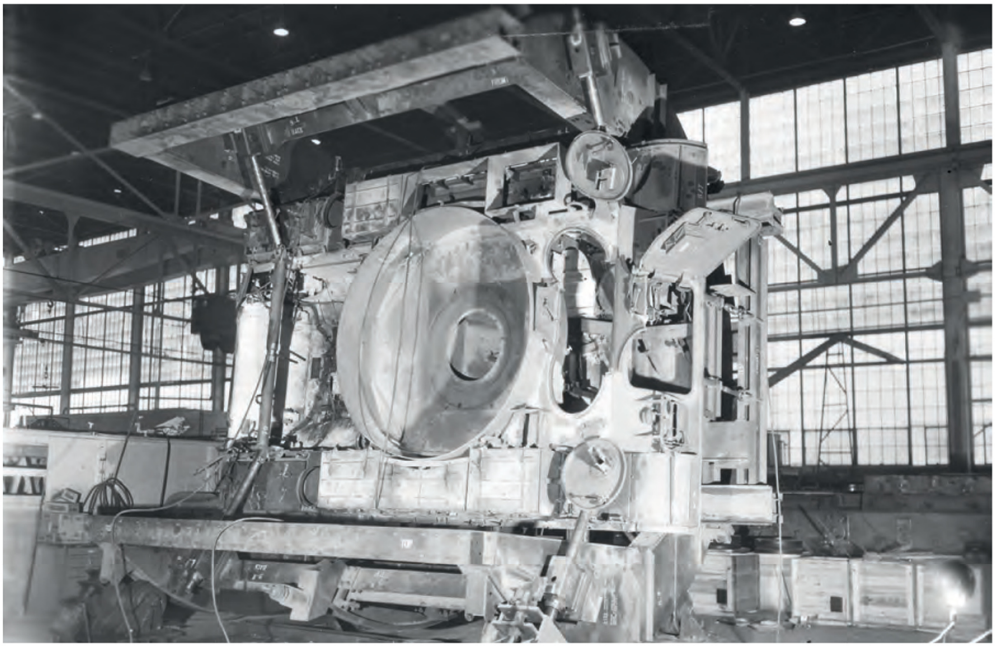
M 42

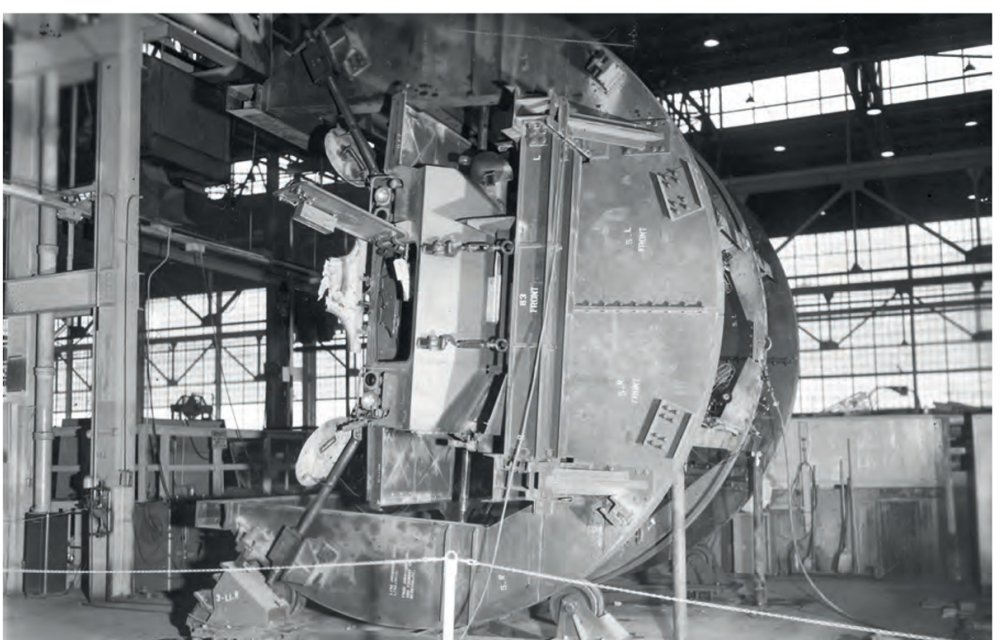
SELF-PROPELLED GUN

CREW MANUAL

The cover of the 1952 training booklet *Your Date with a Duster*, created by Cadillac Motors. The date of this document dispels the myth perpetuated by some that the Duster moniker was created as a result of the dust the vehicles stirred up in Vietnam. *ADA historian Paul Kopsick*

Even when not involved in combat, armored vehicles tend to see hard use. Given the expense of such vehicles, every effort, naturally, is made to get the maximum life from the vehicle. The most extensive repair performed is the depot-level rebuild, which resets the vehicles to as-new condition. The Lima Ordnance Depot in Lima, Ohio, was equipped to rebuild Dusters. To facilitate working on the bottoms of the hulls, the vehicles were secured in a giant, rotating jig, called the "tank rollover." As seen in a February 1954 photograph, an early T141 hull has been secured in the tank rollover in Building A, with the top and front of the vehicle in view. The engine, gun mount, and other major components have been removed, providing a rare view into the tub of the gun mount. *National Archives*

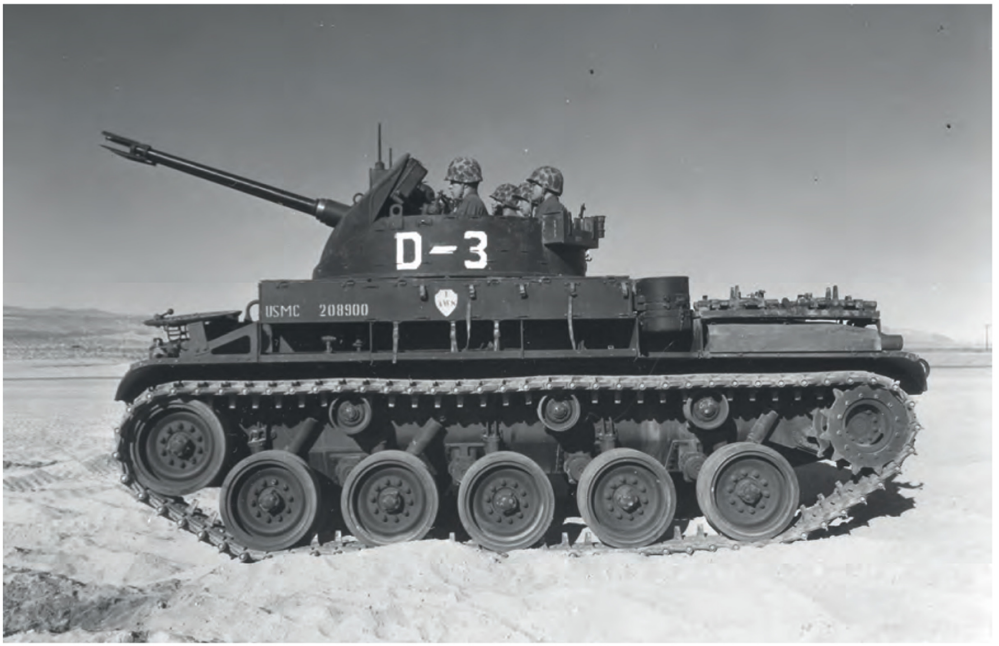




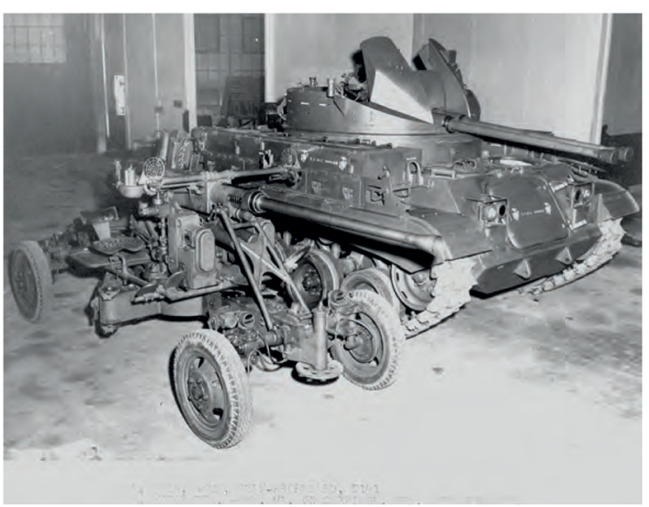
The tank rollover in Building A of the Lima Ordnance Depot is viewed from the side in February 1954, with the front of an M42 Duster visible inside it. Shackles attached to the floor of the rollover are secured to the tow hooks on the lower front of the hull. The door on the front of the hull is locked in the open position. *National Archives*

Four brothers, *from left*, MSgt. LeRoyce "Sloe" Ginn, Sgt. Kenneth "Fizz" Ginn, Cpl. Melvin "Cotton" Ginn, and MSgt. LeRoy "Dry" Ginn, all of the USMC 1st AAA Automatic Weapons Battalion, USMC Reserve, pose with M42 USMC 208926 on August 9, 1955. Two are placing canvas muzzle covers over the flash suppressors of the 40 mm guns. The vehicle apparently was nicknamed for Gen. Archibald Henderson, the nineteenth-century USMC commandant known to all marines as the "Grand Old Man of the Marine Corps." Below the nickname is a "1/AWS" insignia. *National Archives*

A Marine crew with all eyes forward operates an M42 with USMC serial number 208900 at Camp Pendleton. On the storage compartment is a shield-type insignia with "1/AWS" on it. To the front of the gunner's face is the sight-accessory case. *National Archives*



The same M42, USMC 208900, is now deployed with the mount traversed to the left. The design of the gun shield, when viewed from the front or rear, provided scant protection to the crew but was designed to offer protection to the gun receivers, the automatic loaders, and other vulnerable parts of the gun and accessories. *National Archives*



A USMC Duster sits next to a towed M2A1 Bofors cannon of World War II fame. The increased mobility and doubled firepower made the Duster a much more formidable weapon, but the USMC only briefly rostered the Duster. However, Marines often called on Army Dusters for support in Vietnam. *ADA Fort Bliss*

An M42, registration number 12B893, with crew of B Battery, 62nd Antiaircraft Artillery (AA) Battalion, conducts firing exercises at Todendorf, Germany, on June 7, 1958. Stairs are temporarily set up for ease of access, and two observers are on the rear deck: one signaling with a flag, and the other communicating by telephone. Normally, the crew comprised six men: the squad leader, gunner, azimuth tracker, right cannoneer, left cannoneer, and driver. The six crewmen had complex duties that varied depending on whether the gun mount was underpowered or manual control. *National Archives*

A crew from the 2nd Platoon, B Battery, 62nd AA Battalion, replenishes the 40 mm ammunition bins of their M42, registration number 12G193, at Todendorf, Germany, on June 7, 1958. Four-round clips of ammunition were stored in ready racks on the rear of the gun mount. Additional clips were stowed in the ammunition lockers on either side of the hull. The M24C reflex sight is being utilized. The lids of two of those lockers are shown open at the lower center of the photo. Part of the barrel of the left 40 mm gun is visible toward the lower left. White stenciling visible on the gun mount includes, *left to right*, "LIFT HERE," "CANTEEN," "COMBAT PACK" (two times), "SPARE CLIPS" (vertically), and "ASBESTOS MITTENS." *National Archives*

On the firing range at Todendorf on June 7, 1958, Privates Bobby Swallows and William Somson of B Battery, 62nd AA Battalion, load four-round ammunition clips into the automatic loaders of the twin 40 mm guns. The automatic loaders served both as a cartridge magazine and a gun-loading mechanism. To the lower left are more clips in a ready rack. *National Archives*

PFC King Reed, the gunner of an M42, was photographed peering through his M24C reflex gunsight on the left side of the gun mount of an M42 of B Battery, 62nd AA Battalion, at Todendorf on June 7, 1958. As the gunner, he controls both the elevation and traverse of the guns during power-control operation, using the handgrips of the drive controller. He also fires the guns by using the triggers on the drive controller handgrips (automatic mode). The gunner could fire a single shot or on full automatic from either the left or right, or both guns simultaneously. *National Archives*

While waiting for a target to appear on the firing range at Todendorf, SSgt. Richard Smalley of B Battery, 62nd AA Battalion, adjusts the automatic lead setter of the M38 computing sight on the right side of the 40 mm guns. Smalley was the squad leader of the vehicle, but his many duties included serving as the lead setter when the guns were in powered operation. *National Archives*

PFC Bill Crane of Headquarters Battery, 62nd AA Battalion, handles a four-round clip of 40 mm ammunition in an ammo box with a four-clip capacity. The scene was Todendorf, Germany, on June 7, 1958. Stacked in the background are hundreds of individual packing tubes for 40 mm rounds. *National Archives*

SFC Melvin Yarborough, a section chief in B Battery, 62nd AA Battalion, points out a target for his 40 mm gun crew to track during a drill at Sullivan Barracks on May 28, 1958. They were practicing for live-firing exercises they were scheduled to begin soon at Todendorf, Germany. A bundle of equipment, including striped aiming stakes, is tied to the ammunition locker. The hold-open latch for the front door, showing registration number 12B642, is above the left headlight guard. All four visible tracks have angled fenders and the hinges and hold-open latches for the overhead hull doors. Several other M42s, including registration number 40228390, are visible at the battery's motor park. *National Archives*

M42s of the 1st Platoon, B Battery, 62nd Antiaircraft Artillery Battalion, are lined up at the battery's motor park at Sullivan Barracks, Mannheim, Germany, on May 28, 1958. This battalion claimed the honor of being the oldest antiaircraft unit in Europe at the time. The registration numbers of the Dusters are, *left to right*, 40228390, 12B642, and 40228377. *National Archives*

Lt. Harry J. Klarmen receives firing instructions from the commander of B Battery, 62nd Antiaircraft Artillery Battalion, on the firing range at Todendorf, Germany, on June 7, 1958. A wooden beam has been temporarily positioned through the rear lifting eyes to support the stairs provided for the convenience of the observers. Arranged to the front of the soldier to the left are containers for 40 mm ammunition. *National Archives*

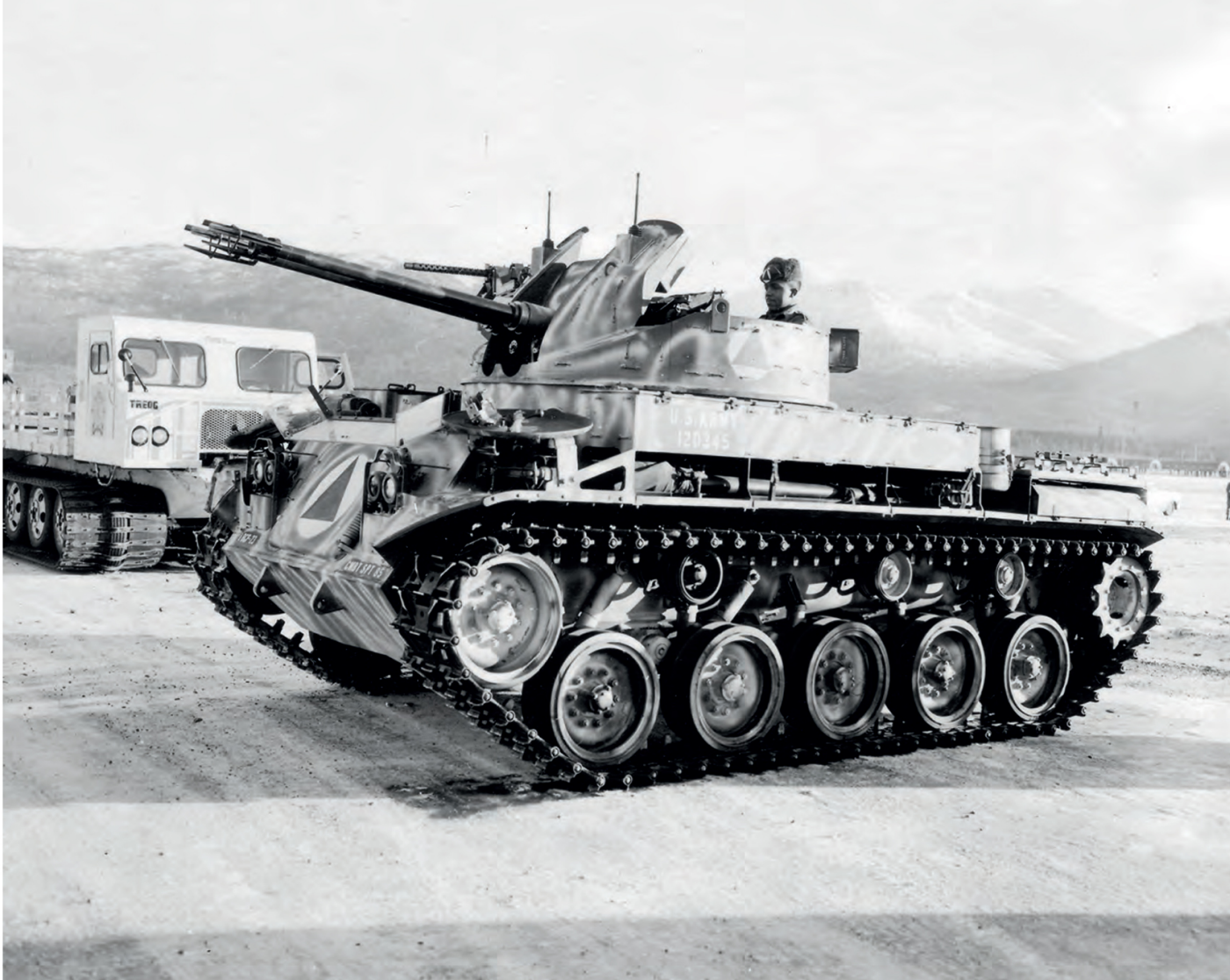
At Sullivan Barracks, Mannheim, Germany, in May 1958, PFC Major Jones passes a 40 mm ammunition box to PFC Charles L. Moore, perched inside the M42, for stowage in the compartment. In addition to the open door of the commander's hatch at the left, the early-type overhead doors are open, with the front panel appearing over PFC Moore's head and the rear panel leaning against the front of the gun mount. The container on the inside of the front hull door was for storing an M19 periscope. The bridge classification marking is on the front plate of the hull, and suspended between the front tow hooks is a sign in English and German that explosives are being handled on board. *National Archives*

The crew of an M42 Duster, registration number 12C026, of A Battery, 2nd Automatic Weapons Battalion (Self-Propelled), 278th Artillery, Alabama National Guard, undergoes firing exercises on the range at Fort Stewart, Georgia, on April 1, 1959. Also on board are an observer and signalman. The spare barrel rack is empty, and conical flash protectors are used. This early unit has square front and rear fenders. *National Archives*

The crew of an M42, registration number 12B843, fire at a towed aerial target at "C" Range, Fort Stewart, Georgia, on April 1, 1959. Empty storage boxes for 40 mm ammunition are neatly stacked as a stairway to the rear of the vehicle. An observer on the rear deck holds a signal flag. The flash suppressors are the early, conical type, as are the square fenders and rear storage boxes. Some smoke is visible in the gun mount, probably from spent shell casings being ejected down the deflector chutes. *National Archives*

On July 29, 1961, M42 crews of the 1st Battalion, 278th Artillery, conduct summer training exercises at the Pelham Range at Fort McClellan, Alabama. The closest vehicle, registration number 12B924, has a waterproof cover secured over the gun mount, part of which has been rolled back so the gun crew can be at their posts. Dustcovers are fitted over the muzzles of the guns. The smoke and dust in the right background are from other 40 mm guns being fired. *National Archives*

Two children marvel at an M42 on display in the Dallas, Texas, area around 1960. The three-prong reinforced flash suppressors are present on the muzzles of the 40 mm guns. The front hinges for the overhead doors between the driver's and commander's hatches are visible at the top of the glacis. On the front door is a box for .30-caliber ammunition and storage clips for a carbine. Later, this box was moved to the left side of the door and mounted vertically, and a storage box for an M19 periscope was mounted at the center of the door. *Air Defense Artillery Museum*



Specialist Fourth Class John Myers sits at his position as gunner of an M42, registration number 120345, in Alaska on January 27, 1961. His unit, the 1st Battle Group, 23rd Infantry Regiment, was soon to embark on Exercise Willow Freeze. A camouflage scheme of sprayed white or light-colored paint was applied in stripes and zigzags to the vehicle. A light-colored circle with a dark triangle in it, probably a tactical sign, was on the side of the gun mount and the front hull door. To the front of the driver's and commander's hatches is a Plexiglas windshield with side wings; it is hinged and is folded down. An M1919C4 machine gun is on the right-side pintle. *National Archives*

An M42 and crew from 1st Battle Group, 23rd Infantry Regiment, were photographed in winter camouflage during Exercise Willow Freeze at Tolsan's Lake, Alaska, on February 11, 1961. The gun mount is traversed to the rear, and exhaust vapor is emanating from the muffler at the left. What appear to be clear plastic windscreens are to the front of the driver's and squad leader's hatches. Winter training exercises such as Willow Freeze would severely test the exposed gun crews. *National Archives*

An M42, registration number 12D326, was photographed between Crosswind and Fish Lakes, Alaska, during Operation Willow Freeze on February 17, 1961. The vehicle is in the same sprayed-white camouflage scheme as the earlier photo of an M42 of the 1st Battle Group, 23rd Infantry, and has the same foldable Plexiglas windshield with side wings. Snow is piled up here and there on the vehicle. *National Archives*

Another view of registration 12D326, showing more of the field-applied camouflage. *National Archives*

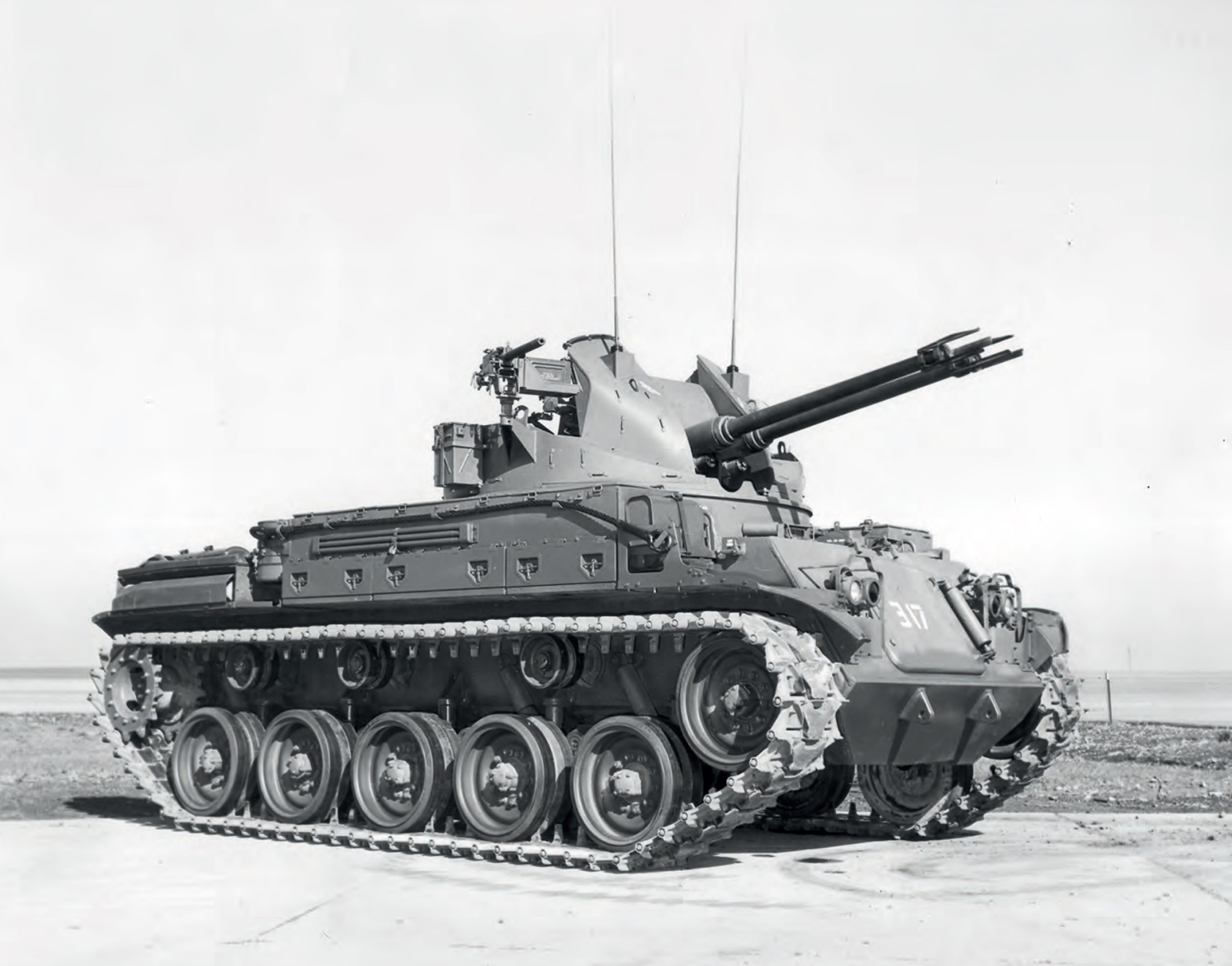
This M42 belonging to Combat Support, 1st Battle Group, 9th Infantry, from Fort Wainwright, Alaska, was photographed during Exercise Great Bear near Quartz Lake, Alaska, on February 20, 1962. The vehicle was operating in defense of the 65th Transportation Company, which in turn was supporting the Aggressors in the maneuvers. A coating of white camouflage paint with hard edges has been applied to parts of the vehicle and is carefully cut in around the unit marking on the glacis. The vehicle and even the crewmen's Arctic hats wear a tactical symbol of a white circle with dark-colored triangle. *National Archives*

In wintry conditions, an M42, registration number 12B747, with crew from the 42nd AA, conducts live-firing exercises. The vehicle is wearing its stock semigloss Olive Drab paint scheme, with no attempt to camouflage it to match the snowy conditions. The barrels are not equipped with any flash suppressors, and a crewman on the ground is ready to hand up a four-round clip of 40 mm ammunition. "CPL BALLER" is painted in white on the side of the gun mount. A 5-gallon liquid container is stowed in the rack to the front of the ammunition locker, and there is an unusual set of very long turnbuckle eyebolts on the front towing shackles, typical of the tie-downs used to secure the vehicles to railroad flatcars. Another M42 sits in the background. *Air Defense Artillery Museum*

In a photograph possibly taken at the same time and place as the preceding one, the crew of M42, US Army registration number 12B746, perform a live-firing exercise in the winter. On the rear deck is a signalman with a white helmet cover, waving a flag. Next to him is likely the squad leader, the commander of the vehicle, and crew. Note the absence of a flash suppressor on the visible 40 mm gun barrel. *National Archives*

An Ethiopia-bound Air Defense Training Team undergoes refresher training on M42 maintenance at Fort Bliss on July 29, 1965. The mount is swung to the rear, and the barrels have been removed from the 40 mm guns, the openings of which have been covered with tape. With the access doors of the rear deck open, the white-colored cross-drive CD-500-3 transmission inside the rear of the hull is visible. *National Archives*

Maj. Gen. George T. Powers III, commander of Fort Bliss, pauses to visit with SSgt. A. M. Myers at the driver's controls of an M42 of B Battery, 1st Battalion, 1st AD GM Brigade, on February 17, 1966. This is a later M42, since it lacks the split overhead door between the driver's and commander's hatches. The coil spring that assists in the opening and closing of the driver's hatch door is visible, as is the locking handle with a round knob on the end. *National Archives*



When the decision was made to deploy the Duster to Vietnam, the vehicles themselves were prepared. The original caption for this photo reads, "Twin 40-millimeter guns of M42A1 fire at rates of about 240 shots per minute. M42 can be used against low-flying aircraft or ground targets. Under the guidance of the Army Weapons Command at Rock Island, Illinois, unserviceable units stored in depots throughout the United States were rebuilt and are now in service." *National Archives*

Trainees are learning how to operate the M42, registration number 12F451, at the Air Defense School at Fort Bliss, Texas, on June 17, 1966. They were attached to B Battery, 1st Training Battalion. This M42 and the one parked next to it, registration number 12F476, are coated with a fine film of dust, with rubbed-away spots especially on the equipment lockers below the ammunition lockers. The machine gun mount protruding from the 40 mm gun mount lacks its pintle mount and machine gun. The observers typically seen on the rear decks of M42s during live-firing exercises, one with a flag and the other on the phone, are present. *National Archives*

An M42 crew of A111 of the 1st Battalion, 44th Artillery, practices firing at an aerial target over the Doña Ana Range at Fort Bliss. The lids of several of the ammunition lockers to the side of the gun mount are open, since during firing operations it was necessary to retrieve ammunition clips from them on a continual basis. On the rear deck are the two boxes containing M20 3.5-inch antitank rockets. The deflectors on the rear of the exhausts are also visible. *National Archives*

Officer candidates learn the fine points of the gun mount of an M42, registration number 12H247, at Fort Bliss, Texas, on July 25, 1966. The front hull door is open, exhibiting the national insignia and bridge classification symbol. Spare 40 mm barrels are stored under the ammunition locker, and two antenna masts mounted on AB-15/GR mast bases are visible on the gunners' shields. *National Archives*

During a training exercise for M42 crews at Fort Bliss on June 30, 1966, 1st Sgt. Richard E. Evans of Headquarters Detachment, 1st Training Battalion, Air Defense (AD), 1st Training Brigade (AD), demonstrates how easy it is to lob a hand grenade into the open gun mount, registration number 12L714. The results would be disastrous. This is the first of several photos taken on that occasion to document the benefits of a grenade catcher designed for the gun mount. This M42 is freshly overhauled, judging from its spotless paint and bright metal mufflers and exhausts. *National Archives*

Crewmen of C Battery, 1st Training Battalion (AD), are mounting an experimental grenade catcher over the gun mount of a different M42, registration number 12H303, on the same occasion at Fort Bliss. The grenade catcher was a tubular frame covered with mesh screen, with an opening at the front to accommodate the twin 40 mm guns. *National Archives*

The grenade catcher is in place, and the crewmen are demonstrating the hinged panels that allowed the crew to access the mount. An instructor at the left lectures a group on the device. The M20 rocket-launcher boxes are absent from the rear deck; these were being progressively phased out from M42s by the time of the Vietnam War. *National Archives*

The grenade catcher was intended to protect the M42 gun mount and crew from enemy hand grenades when the vehicle was in active combat zones or in areas under threat from guerrilla operations. Although a well-meaning concept, it was never implemented since it restricted access to ammo and field of vision. *National Archives*

The staff sergeant to the right appears to be instructing the two specialists on some point concerning the 40 mm Bofors gun system on an M42 with registration number 40228544. The vehicle is in new condition, with clean, semigloss Olive Drab paint and noncorroded mufflers, exhausts, and muffler shields. The three-piece cleaning rod stored in brackets on the side of the ammunition locker partially covers the national insignia. Antennas and their bases have not been installed. *Air Defense Artillery Museum*

An M42A1 Duster, registration number 12H298, was photographed in a sandy flat at Fort Bliss, Texas. This training vehicle is shorn of its radio antennas, flash suppressors, and defensive machine guns. The stencil at the front of the ammunition locker identifies a radio harness kit that has been installed in the vehicle. The small insignia on the mount and ammunition locker is that of the US Army Air Defense Artillery Center and School. *Air Defense Artillery Museum*

A US Army M42, registration number 12G075, exits a landing craft upon crossing a river in at Dong Ha, Republic of Vietnam, around 1966. Markings on the lower frontal hull plate indicate the vehicle was assigned to 1st Battalion, 44th Artillery (Automatic Weapon, Self-Propelled), I Field Force Vietnam. Ring sights are visible on both sides of the gun mount. The box-shaped device on the right side of the shield is an antenna-matching unit. *National Archives*

When the Duster was upgraded with the fuel-injected Continental AOSI-895-5 engine, replacing the original Continental AOS-895-3 engine of the M42, the improved version was designated the M42A1. This example of an M42A1, registration number 40228548, served with the 4th Battalion, 60th Artillery, and was performing a defensive role at a fire-support base in Dak To Province during Operation Greely in July 1967. Worthy of notice are the nonreinforced, three-prong flash suppressors on the 40 mm guns, two different speed ring sights, and the T141-style mudguards. *National Archives*

The crew of an M42A1, registration number 40228548, of B Battery, 4th Battalion, 60th Artillery, scrambles to their stations during a crew drill during Operation Greely, on July 16, 1967. A 5-gallon liquid container is stowed at the front of the ammunition locker, and a host of gear is fastened to the vehicle, from canteens and ammunition holders to knapsacks and musette bags. *National Archives*

During preparations for Operation Greely on July 15, 1967, PFC Charles W. Abbott, a photographer with Department of the Army SP Photo Team C, films movie footage of the gunner of an M42A1, registration number 40225848, of the 4th Bn, 60th ADA, near Dak To. The gunner's speed ring sight and smaller rear peep sight are visible. The case on the rear of the shield to the front of the gunner is the M61 gunsight accessory chest, in which was stored the speed ring sights, M24C reflex sight, and other gunsight fixtures. Rather than stenciled white signs indicating the location of stowed gear, this vehicle has yellow signs with black-and-white borders and black lettering. *National Archives*

Mud and glare have obscured the registration number (possibly 40228841) and unit markings of this Duster photographed on July 15, 1967, during Operation Greely, but the stenciled name "FOX" is clearly visible on the glacis to the front of the commander's hatch. The driver is in his seat with his head above the hatch and is wearing a CVC helmet. Neither of the hatch doors has a periscope installed in the periscope mount. The flash suppressors on the 40 mm guns are the three-prong, nonreinforced type. This vehicle has the earlier squared fenders as well as the door hinged between the two hatches. *Patton Museum*

Sergeant Henry B. Hood, a squad leader of an M42, and SP/4 Delbert Benjamin, a gunner, both of B Battery, 4th Battalion, 60th Artillery, attached to the 173rd Airborne Brigade, feed 40 mm ammunition clips into the automatic loader of their guns. They were in Dak To Province, Republic of Vietnam, performing crew drills in preparation for Operation Greely on July 15, 1967. *National Archives*

The cover of one of the exterior 40 mm ammunition storage compartments is open, revealing the contents. These compartments on both sides of the vehicle held a total of 240 rounds of ammunition in sixty clips. In addition, there were storage provisions inside the hull for an additional 240 rounds of 40 mm ammunition, stowed in sixteen-round cans. In addition, a large quantity of machine-gun ammunition was carried. *National Dusters, Quads and Searchlights Association*

At Landing Zone (LZ) Willy, overlooking the entrance to the An Lao Valley on July 18 or 19, 1967, PFC Wilson J. Burgett of North Hollywood, California, loads a sixteen-round 40 mm ammunition can into M42 C-141, registration number 12?536, as part of the provisions for the vehicle's internal ammunition storage. In the background, a CH-47A Chinook helicopter is airlifting supplies into the landing zone. *National Archives*

Duster C-141 of the 4th Battalion, 60th Artillery, lays down fire on a target across the An Loa River from their position on LZ Willy. The tracers delineating the trajectory of the 40 mm projectiles make it easy to see why the Vietcong and NVA called the Dusters "Fire Dragons." Two clips of 40 mm ammunition are in the ready rack at the rear of the gun mount. Silhouetted in the smoke to the right of the 40 mm gun mount is the sight setter's speed ring sight and the mount for a machine gun. *National Archives*

The crew of C-141 of the 4th Battalion, 60th Artillery, perform maintenance on their 40 mm gun mount after a fire mission at LZ Willy, Binh Dinh Province, Republic of Vietnam, on July 19, 1967. The twin 40s of the M42, which was in a sandbagged revetment, had been directing harassing fire at enemy units attempting to move through the entrance to the An Lao Valley. The 40 mm guns are set at maximum elevation so the breechblock and firing pins can be accessed, cleaned, and inspected. *National Archives*

At LZ Willy in the Republic of Vietnam in July 1967, an M42 of the 4th Battalion, 60th Artillery, assigned to the 41st Artillery Group, is entrenched behind sandbags, covering the entrance to the An Lao valley and ready to lend support to the 1st Battalion, 7th Cavalry Regiment, during Operation Pershing, a search-and-destroy mission in the valley. To the right in the photo is an M151 MUTT from B Battery, 29th Artillery (SLT), with a xenon searchlight mounted in the rear, which was attached to the 4/60th. *National Archives*

Two cannoneers from B Battery, 4th Battalion, 60th Artillery, load the 40 mm guns of their M42A1 at the aptly named Duster Hill adjacent to LZ Uplift near Qui Nhon, Republic of Vietnam, on August 8, 1967. They were Sp/4 Nick Carter (*left*) and Pfc. Tim Adcock. The M42A1 is emplaced in a sandbagged revetment in the perimeter defenses of the hill. *National Archives*

This Duster of 1st Battalion, 44th Artillery, is providing security for 11th Engineer troops as they begin to rebuild this destroyed bridge adjacent to Highway 9 in Quang Tri Province in the north-central coast region. *Marinello Archive via ADA historian Paul Kopsick*

M42 crews of the 1st Battalion, 44th Artillery, stand for inspection at Camp J. J. Carroll, with the battalion commander shaking hands with a crewman. The machine guns mounted on the sides of the 40 mm gun mounts are protected by canvas covers. On the right gunner's shields of these vehicles is a housing of thin, welded steel to give some protection to the antenna-matching unit MX-2799/VRC, a type of converter that was attached to the bottom of the antenna base and linked to the AN/VRC-46 radio set that was installed in later-production M42s. *National Archives*

The observation tower at Hill 250 (Mike Hill) overlooking the Cam Lo River and valley along the DMZ. On January 24, 1968, a major invasion force of hundreds of NVA soldiers was spotted coming across the river in boats with plans to overrun Camp J. J. Carroll and deal a crippling blow to US forces at the start of the Tet New Year's celebration. *ADA historian Paul Kopsick*

The First Major Duster Battle of the Vietnam War: US Forces Defend Camp J. J. Carroll

Camp J. J. Carroll was a large USMC firebase located along Highway 9 in Quang Tri Province, near the Cua Viet and Cam Lo Rivers. In January 1968, Camp Carroll was strategically important not only due to its location but also because it was home to the 175 mm M107 guns of Battery C, Second Battalion, 94th Artillery, whose 20-mile range was the longest of any US land-based artillery of the war and thus was able to provide fire support over a large area. Not surprisingly, Camp Carroll was a prime target for the North Vietnamese army (NVA), and on January 24, 1968, two events happened in the vicinity that demonstrated the effectiveness of the Duster and the bravery of their crews.

That day, two supply trucks from Camp Carroll en route to Dong Ha were ambushed en route. As it turned out, that ambush was a terrible strategic mistake on the part of the NVA.

The American trucks escaped, but the incident was reported, and the Marines asked Battery 1st Battalion, 44th Artillery, to see if anything unusual could be seen from their vantage point on Hill 250.

Sgt. Lou Block, Charlie Battery, 1/44, in the lookout tower atop Hill 250, reported that a large number of NVA were crossing the river, with the apparent intent to overrun Camp Carroll. Achieving such a victory in the early stages of the Tet Offensive would be a strategic and psychological victory for North Vietnam and cripple the morale of the Americans.

After confirming Block's observation, Lt. Steve Moore requested permission from Marine HQ to fire on the enemy. Permission was granted, and Moore ordered the adjacent Duster to engage the enemy.

On the basis of the number of NVA that both had crossed the river or were on the water, Moore knew more firepower was needed. He ordered more Dusters in position until ultimately five deployed in a staggered formation on the flat on Route 9 to the north side of Camp Carroll, augmenting the one on Hill 250 in defending the base. The NVA boats were soon taken under fire by first one, then two, then all the Dusters, the sheer number of enemy troops and boats requiring the massed firepower.

Moore spoke with each squad leader and told them to begin talking with each other to coordinate their firing pattern. He knew these men were good leaders, and felt confident of their capability of stopping any more NVA from further crossing.

So many NVA were crossing the river that the Dusters fired virtually continuously, the vehicles shifting back and forth along the flat so that the expended cartridge cases, which exited beneath the vehicle, would not clog the discharge chutes and prevent firing. So urgent was the situation that the normal cautions of limiting firing to allow the barrels to cool were discarded, resulting in the barrels of at least one Duster warping and having to be replaced during the action.

Lt. Steven Moore of C-1/44, who oversaw the Dusters defending Camp Carroll. Moore badly wanted to send relief to the men of the ambushed convoy below but was overruled by Capt. Easter. *ADA historian Paul Kopsick*

C-111 of 1/44 in position at the perimeter of Camp J. J. Carroll. Ammunition cans stand in front of the open forward hatch, while others have been carefully placed to form a revetment. *ADA historian Paul Kopsick*

Concurrently, a second convoy—Marines headed west from Dong Ha to Camp Carroll—was ambushed. Unlike the prior convoy, this one was pinned down and the Marines were forced to dismount. The 4th Marines assembled a reaction force to relieve the convoy. This force consisted of a platoon of Marines supported by an M48A3 gun tank and an M67A2 flame tank. The Marines asked that this group be augmented by a pair of Dusters from 1/44. Section chief 1Lt. Steve Hardin, with a new, inexperienced crew, and Sgt. Chester Sines's track, plagued with an inoperable starter, requiring it to be towed to start, were then so detailed. The Dusters were refueled and loaded with ammunition far in excess of that called for by Army manuals.

The relief force rolled out of the Camp Carroll gate at 1230, under overall command of Marine captain Kent, with the M48A3 leading the relief force, followed by Lt. Hardin's track, then the M67A2 "Zippo," followed by Sines's Duster. Marine infantry rode on the back of the M67A2 and Sines's track.

By 1245 the relief force was within 100 yards of the ambushed convoy and was engaged with the enemy. By 1300 firing had ceased, and, tragically, the fresh new lieutenants ordered the relief force to advance into the "kill zone." The NVA launched a volley of rocket-propelled grenades (RPGs) from 20 feet away, knocking out the M48A3 and Lt. Hardin's Duster. Hardin's gunner, Spec 4 Gilbert, lost both arms, and his cannoneer the backs of his legs. Sgt. Sines's men quickly took the RPG teams under fire, while his driver, Spec. 4 Joseph Belardo, and the flame tank shifted 150 yards away to a position on a small knoll overlooking the site.

Sgt. Sines radioed Camp Carroll, requesting reinforcements. Capt. Easter, C Battery, 1/44, replied, "Hold position; recover men, casualties, and equipment; return to Camp Carroll."

Given the size of the force attempting and, in some cases, succeeding in crossing the river, the decision was made to send no more relief to the beleaguered convoy. Instead, the forces would be held back to defend Camp Carroll against the anticipated enemy push, and to continue to fire on the forces attempting to cross the river to thwart such an attack.

Sines's men cautiously advanced their Duster toward the disabled Duster, sweeping with M60 and 40 mm fire. When within 50 yards, NVA opened fire with automatic weapons and RPGs, forcing Sines to withdraw under heavy fire. At about this time, the barrels of the 40 mm guns, which had been hastily changed at Camp Carroll but not thoroughly cleaned of Cosmoline, began to smoke. The crew attempted to quickly clean the barrels further, fearing a jam would develop due to the excess.

Once again Sines tried to reach the other Duster, this time getting within 30 yards before again being pushed by a powerful NVA force. By 1415 the Duster was down to sixty rounds of 40 mm ammo, and the M67A2 was out of .50-caliber ammo but advised Camp Carroll that they refused to abandon the convoy and were expecting to be overrun. An ammo truck crewed by volunteers attempted to resupply the beleaguered Duster men but were turned back by NVA automatic-weapons fire. A second group of volunteers with an ammo truck, augmented by a Marine weapons squad, made another attempt at 1500 hours and succeeded, with some difficulty, in reaching Sines.

With the ammunition being replenished by a human chain to the ammo truck, the Duster resumed automatic fire, clearing a path to the convoy. After a further 2,000 rounds, the guns jammed. As the crew attempted to clear this, an NVA recoilless rifle round landed nearby, while almost simultaneously the two 40 mm rounds jammed in the breeches cooked off. The blasts severely wounded several men, and flames filled the 40 mm mount.

At 1700 hours, Sines began withdrawing to Camp Carroll, with his Duster leading the ammo truck and the truck hauling the Marine weapons squad, and the M67A2 bringing up the rear.

Upon reaching camp, the Duster men were ordered not to speak of the action that they had seen, for fear of demoralizing the troops in camp by raising concerns about being overrun. Many of the Duster men felt abandoned by their command and as if—rather than being recognized for their heroic actions—they were being made a scapegoat.

Regarding the defense of Camp Carroll, Lt. Moore, in his final letter to his men before he passed away in June 2019, wrote, "I watched with pride as I saw just how the men, (my men) were in full operation to push and push and push the enemy away. I don't believe anyone knew of this part of the day and how the crews protected J. J. Carroll. What joy it was to be their leader."

This overhead photo of a Duster emplaced at Camp Carroll shows the position of crewmen in the Duster. The pit forward and to the left of the vehicle is the "dud pit," into which misfiring rounds were tossed. This was a hazardous chore, with the rounds sometimes detonating late (thus the reason for the pit) or in the hands of the crew handling them. *ADA historian Paul Kopsick*

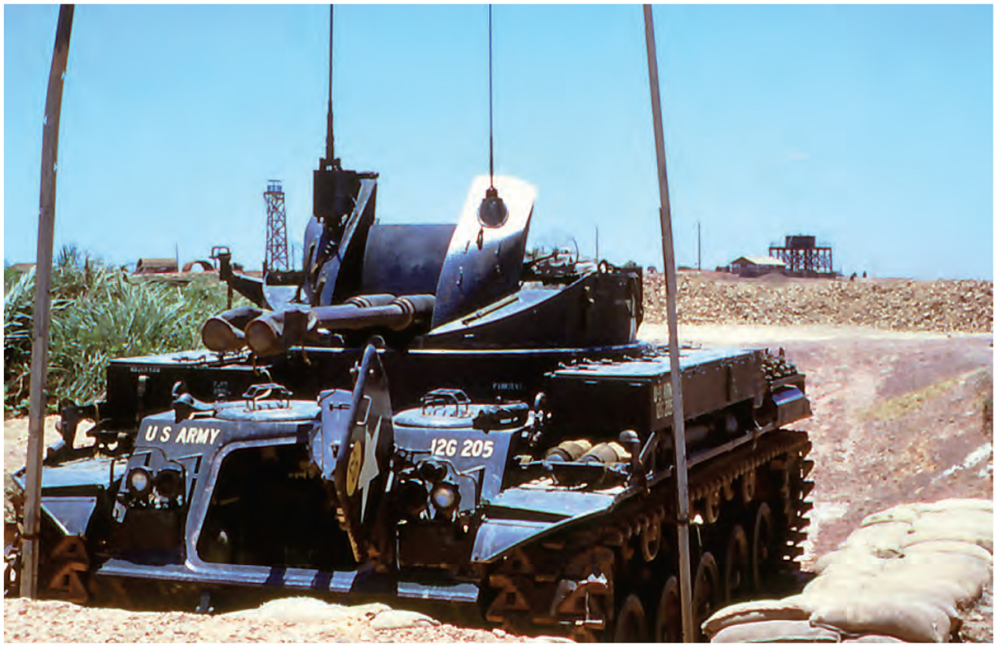
This photo of the area of the ambush and firefight of January 24, 1968, on QL9 during the siege of Camp J. J. Carroll was taken shortly after the battle. Piles of spent 40 mm ammo shell casings litter the road, many flattened by being run over. The Dusters had to change their positions on the roadway to allow for the spent casing to clear the ejection port under the Duster. *ADA historian Paul Kopsick*

Two M42s of the 1st Battalion, 44th Artillery, were photographed at the Rockpile (position #1). The crew of the track on the left (A-122, RN: 12V319) is on a convoy run from Dong Ha, which indicates that Route 9 was open at the time. They appear ready for a sudden firefight, having filled the ready racks with 40 mm ammunition and draped four-round clips over the side of the gun mount. A rear-pointing M60 machine gun and ammunition box are on the pintle mount at the rear of the 40 mm gun mount. The muffler for the auxiliary generator "Little Joe" is visible atop the right exhaust muffler. This M42 still has the boxes for the M20 antitank rockets on the rear deck but were used for storing miscellaneous equipment. The box to their right houses the external commo port. The unmanned M42 to the right is C-221, which has the front hull door open and the twin 40s traversed to the rear. *Air Defense Artillery Museum*

A pair of M42s of the 1st Battalion, 44th Artillery, stand watch from behind a sandbagged revetment at Gio Linh or Con Thien overlooking the Ben Hai River valley and the DMZ. The front hull door is open on the closer vehicle, and a piece of canvas is draped over the machine gun at the rear of the 40 mm gun mount. M42s were frequently called on to provide perimeter defense at bases in Vietnam, a task they were well suited to with their powerful, fast-firing guns. *Air Defense Artillery Museum*

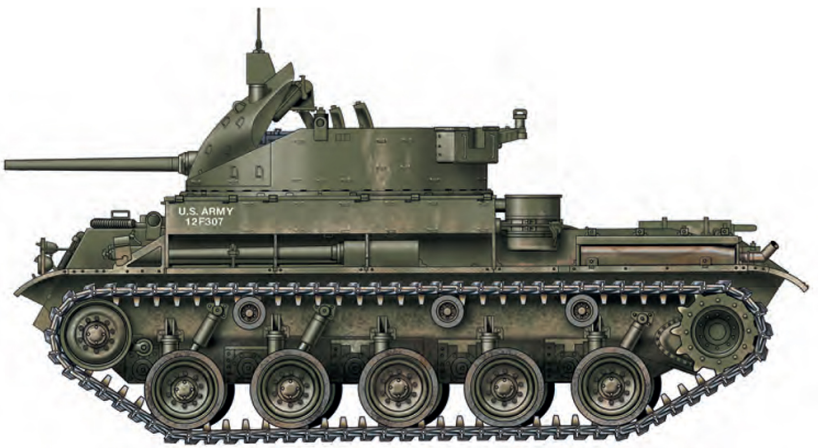
"Bouncing Betty" track D211 (12D106) takes lead position in a vehicle convoy somewhere near the DMZ. Fittingly, the Duster stirs up a lot of dust as it leads the convoy along the road. In this position, the exposed crew of the M42 is vulnerable to ambush, but if any initial attack on the convoy was not successful, the twin Bofors could quickly wreak havoc on the enemy. *ADA historian Paul Kopsick*

Duster A241 (12G205) of Battery A, 1st Battalion, 44th Air Defense Artillery, sits in a daytime guard position at the Dong Ha base camp. The closeness of the wooden aiming stakes indicates a very narrow field of fire if the Duster was called into action. *Marinello Archive via ADA historian Paul Kopsick*

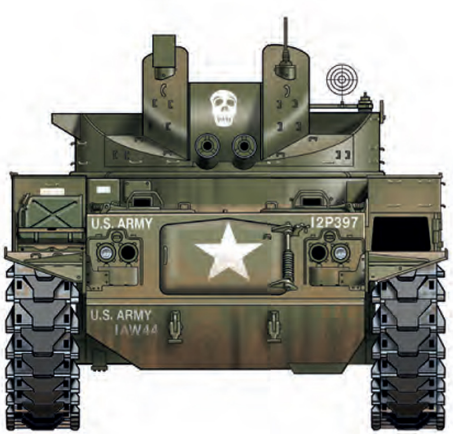


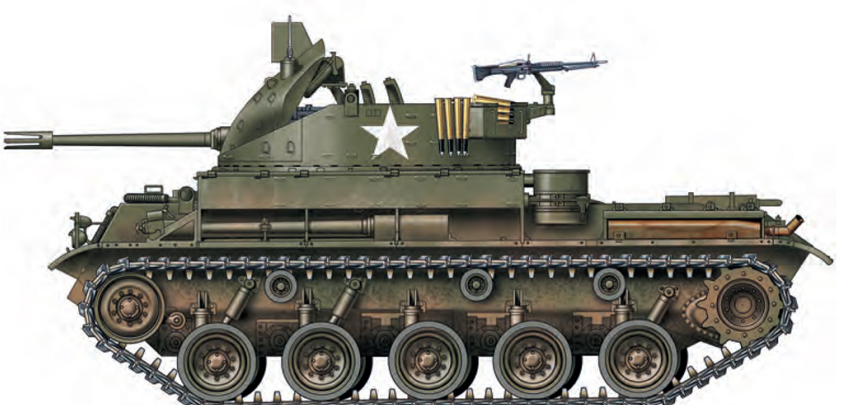
In another view, it is clear that A241 is not in ready-fire condition since there is no ammo checked and ready. *Marinello Archive via ADA historian Paul Kopsick*

In the defensive perimeter at Con Thien, Republic of Vietnam, in late July 1967, the driver of an M42A1 of Battery B, 1st Battalion, 44th Artillery, attached to the 3rd Marine Division, eases the vehicle into a revetment. The registry number, 12P397, appears on the front door. The flash suppressors have been removed from the muzzles of the 40 mm guns. This was a common practice in Vietnam because the nonreinforced three-prong flash suppressors issued to many Dusters didn't hold up under steady use and were removed. *National Archives*



"Born to Wonder" was a B Company, 1st Battalion, 44th Artillery, Duster in 1968.





This M42A1 served with the 1st Battalion, 44th Artillery, near Dong Ha, Vietnam, in 1969.

The Battle at Phu Tho Racetrack in Saigon, February 1968

Lt. Col. Gibler choppered into the racetrack with B and C Companies' 3th–7th Infantries and set up the command post in the director's office. The Phu Tho racetrack was vital as the only sizable landing field in Saigon. Moving down a narrow street three blocks away from the racetrack, B Co. 5-60th Mech, having neglected to deploy dismounted security to its front and flanks as ordered, was ambushed. "The company was firing like hell with .50-cals and M60s, but they couldn't get out of there," said MacGill, who was overhead with Gibler. "They were totally blocked in. I thought we were going to lose the whole company." Huey gunships were made available instead, and after an hour of nonstop gun runs on the cemetery, the VC broke. The 3rd Battalion, 7th Infantry, swept the area around the racetrack for the next two days, reinforced by tracked M42 "Dusters" with twin, rapid-firing 40 mm cannons in an open turret. "The twin 40s were a lifesaver," said MacGill.

"Whenever we ran into resistance in a building, the company commander in contact would pull a Duster up and point out which room was giving him trouble, then they would wheel up there and pop four or five rounds through the window real quick. The shrapnel effect on the inside of the room just cleared 'em right out."

Army of the Republic of Vietnam (ARVN) intelligence indicated that General Do's command post was entrenched in tunnels and bunkers in an adjacent cemetery. "The ARVN want to go in and wipe 'em out if you'll block for 'em," Schroeder said. "Bullshit!" Gibler rejoined. "I've got armor here, buddy. I'm going after 'em." The attack was launched on February 11; Gibler commanded the operation from the ground. With the VC boxed in, the Dusters chewed the bunkers up with their twin 40s. The body count was forty-nine, and four prisoners were taken, along with radios, documents, etc. General Do, however, was nowhere to be found.

This engagement was described as follows in the 5/2nd's quarterly *Operational Report and Lessons Learned* (*ORLL*), May 1968:

On February 9, 1968, the Platoon Leader, 2nd Platoon, B Battery, 5/2nd, led four Dusters to the Phu Tho racetrack in the western section of Saigon. They were attached to Task Force Ware and assigned the mission of supporting the 3rd Battalion, 7th Infantry, 199th Light Infantry Brigade.

On 10 and again on February 11, 1968, A, B, and D Companies moved out on a sweep of the area west of the racetrack. Each company was accompanied by a Duster which advanced behind the infantry, and each Duster was secured by an infantry squad. Initially, difficulties were encountered when the M42s were led by the advancing infantry into streets too narrow for them to pass through. There was substantial enemy activity in the area on the night of the tenth. At 1015 hours on the 11th, D Company, with the Duster carrying the B Battery Platoon Leader, moved to investigate reports of NVA soldiers seen moving into a village on the outskirts of the city. After participating in this search-and-destroy mission for a period of time, the Duster had to return to the racetrack for fuel and D Company continued the advance without it.

Two platoons of D Company were soon pinned down by heavy automatic-weapons fire coming from haystacks in the area. At this time, the Duster deployed with B Company as a blocking force was moved over to aid D Company. As it moved from the northeast side of the village to the south side it began receiving small arms and B-40 rockets. The Duster returned fire and as the 40 mm rounds detonated against haystacks, numerous secondary explosions were set off. The M42 would back into firing positions and fire over the rear deck to afford better protection from the B-40 rockets. As the platoon leader's M42 returned from refueling, it became heavily engaged and fired on targets marked by the infantry. The enemy activity decreased sharply toward nightfall and was sporadic throughout the night.

Three M42s were photographed at the Phu Tho Racetrack near Cho Lon, Republic of Vietnam, on February 9, 1968, at the height of the Tet Offensive. The vehicles belonged to Battery B, 5th Battalion, 2nd Artillery, attached to the 25th Infantry Division, and soon would be engaged in heavy fighting. Clips of 40 mm ammunition are draped over any available spot on the gun mounts, in readiness for sudden sustained firing. Ammo trailers are coupled to each of the M42s; the two closest ones appear to be M104 or M105 1½-ton trailers. No auxiliary generator mufflers are visible on these units. *National Archives*

Even during wartime, the crews had to stand for general inspection and were graded on all aspects of the care and maintenance of their weapon. Sgt. John Hughes's crew of track C132 of the 5/2nd ADA "Cool Cobra" stand ready. *Miller Archive via ADA historian Paul Kopsick*

The crew of Duster A-48 of Battery A, 5th Battalion, 2nd Air Defense Artillery Regiment, is on alert during a pause in the action in the summer of 1967. The driver and the squad leader, standing in the hatches, are wearing communications helmets, while the crewman next to the M60 machine gun on the right side of the mount is using a headphones/microphone set over his M1 helmet. Coming up behind is another M42, apparently A-49. *Roland Rodi, A-5/2d via Paul Kopsick*

Duster crews rarely got a hot meal while in the field. They would draw their food rations ("C rations") for whatever time period they expected to be in the field. Here, track B-242 (12V291) of the 5/2nd ADA has just pulled up to its new position. *ADA historian Paul Kopsick*

At Camp Rock Crusher, near the base of Black Virgin Mountain, this M42A1 from 5/2d ADA was set up to aid in perimeter defense around August 16, 1967. As was often the case in defensive scenarios, the gun mount is rotated to the rear. "GYPSY" is painted on the gun shield in red. A binocular case is strapped to the right antenna base, and below it is the flash suppressor removal tool. An M60 machine gun is in the pintle mount. Ammunition boxes for the M60 are strapped to the rear of the gun mount. *National Archives*

Two M42A1s with Battery A, 5th Battalion, 2nd Artillery, stand by in the battery's motor pool at Tan Uyen, Republic of Vietnam, in mid-August 1967. A waterproof cover is strapped to the 40 mm gun mount of the closer vehicle, registration number 12C101. On the fender to the front of the ammunition locker is an extra stowage box. The second M42 has its gun mount rotated to the rear. These M42s were engaged in perimeter defense and convoy escort. *National Archives*

Specialist 4th Class Jorge Fuentes, a gunner with Battery A, 5th Battalion, 2nd Artillery, prepares to clean the barrel of one of the 40 mm guns from his M42A1 at Tan Uyen in mid-August 1967. On the near end of the barrel are interrupted screw threads, which made for the quick removal of the barrel from the gun's receiver. Just beyond the interrupted threads is the coil spring of the recuperator mechanism. A gun barrel carrier tool sits on the right front support, and a breechblock and firing-pin components sit on the back left support. A roll of steel wool is also present. To the right is a new track that will replace one from one of the unit's M42A1s. *National Archives*

In mid-August 1967, two members of Battery A, 5th Battalion, 2nd Artillery, motor pool put their muscles to removing the track from an M42A1. In an arrangement often seen on M42s in 5/2nd tracks, an equipment rack made of iron C-bars and wooden slats has been installed on the rear of the vehicle. Webbing belts reinforce this version of the rear rack. Among the items stowed there are a mud-splattered cot and a 5-gallon liquid container. *National Archives*

Duster crews of Battery A, 5th Battalion, 2nd Artillery, work to make sure their gun mounts are ready for their next mission, in the Republic of Vietnam in 1967. The nearest vehicle has registration number 40228158. Below this number, the door of the forward storage rack is missing, with crumpling to the bin being visible. *National Archives*

In a field in Vietnam adjacent to a ruined building, two M42s are deployed with their guns traversed to the rear. Notice the slight tilt of the track of the nearest vehicle, which is caused by the torque of the drive sprockets. Smoke is visible exiting the rear of the vehicle as it moves forward. All the left ammunition locker doors are open, indicating an alert status. This vehicle's guns lack flash suppressors, while the other Duster has them installed. *Air Defense Artillery Museum*

A sweeping action by the 5/2nd, as described in the 5/2nd Battalion newsletter, *Triumvirate* 2, no. 2 (February 29, 1968)

On February 11, 1968, SSgt. Carl R. Henderson and his squad consisting of SP4 PAYNE, SP4 GLASS, PFC WOODSTEAD, and PFC SHULTY were on a sweep supporting Bravo and Delta Companies of the 199th Inf. At 1330, Bravo Company's CO received word that the VC were seen running into a small village. We moved out for the village with Bravo on the east and Delta on the south. We were with Bravo directly behind the line of Infantrymen. Just before the Infantry were in position, the VC opened up with devastating small[-]arms fire.

With Bravo Company pinned down, we immediately opened up with our 40 mm. Unaccustomed to close "Duster" support, the infantry signaled us to cease fire. After about an hour, the infantry requested us to shoot down a line of trees blocking their field of fire.

Sixty 40 mm rounds later, they had clear fields of fire. Our accuracy and devastating firepower bolstered their confidence in us; they requested more of our support. We were told that Delta Company required our help on the south side. Upon arrival, the platoon leader pointed out to us one of the haystacks from which they were receiving a heavy volume of AK fire. We took it under fire with six rounds of 40 mm and received a secondary explosion sending flames 150 feet into the air. The next thing we heard was the voice of Delta Company platoon leader yelling[,] "I love you, I love you!" He then went on and pointed out ten more bunkers. We received a call on the radio from our B Battery platoon leader wanting to know how our ammo was holding out. Up until this time we had not thought about ammo. Upon a quick check, we discovered that there were only forty rounds left; also, our gas supply was down to ¼ tank. We then requested permission from the infantry to pull back for ammo and fuel supplies. We started to pull back and the VC opened up on us with six B-40 rockets. None of them being accurate, we then destroyed the house from which the rockets were coming. We then received word over the radio that the VC were running out of the village. We readied our M-16s for a "fight to the finish" at which time we found that the VC were running out the other side of the village away from us—this was a welcome relief. We looked around and saw a cloud of dust headed towards our location. It turned out to be our platoon leader with our much-needed ammo. Now with our sister "Duster" we moved down the sides the village delivering fire into the village. The Infantry on a sweep turned up sixty VC bodies in the area. The infantry gave the "Dusters" credit for half. One of the bodies turned out to be that of Major General Tran Do, head of the Communist Central Committee in South Vietnam.

Reported by SFC McPherson. assistant operations sergeant as told by SSgt. Henderson, 2-B-5/2nd Arty.

An M42 from A Battery, 5th Battalion, 2nd Artillery, sits in a vehicle park in June 1968. The front hull door is open, providing a glimpse of a 40 mm ammunition container stored between the driver's and squad leader's seats. The antenna mount on the left gun shield is a later, boxy type, as contrasted with the early, cylindrical type. Both machine gun mounts are wrapped with covers to keep out dust and moisture. *Patton Museum*

Another M42 in a motor park in Vietnam in June 1968 has a similar stake rack at the rear, but the horizontal slats are fewer in number than those in the preceding photo and appear to be of 2 × 6 lumber. A crosspiece through the vehicle's lifting eyes holds the rack in place. The crewman to the right is opening the equipment locker that held spare parts and tools for the 40 mm guns. The cut-down 55-gallon drum at the rear of the vehicle would have made an expedient receptacle for used engine oil. *Patton Museum*

An M42 of Delta Battery, 5th Battalion, 2nd Artillery, proceeds down a dirt road in 1969, while another advances cautiously through tall grass somewhere in III Corp Vietnam. Both vehicles have artwork on the front hull doors. The one on the right (registration number 12G226) has paintings of a scantily clad woman and a rabbit's head in profile, and "Twin Forty" written on it. The names of the track commander and driver, Sgt. Thomas R. Gahagan and Specialist Lewis, respectively, are painted in white on the glacis. The track in the background has the Green Monster and artwork on the front hatch. Although from the same section, one has flash suppressors and one does not. They also have a different style of mud skirts. *Air Defense Artillery Museum*

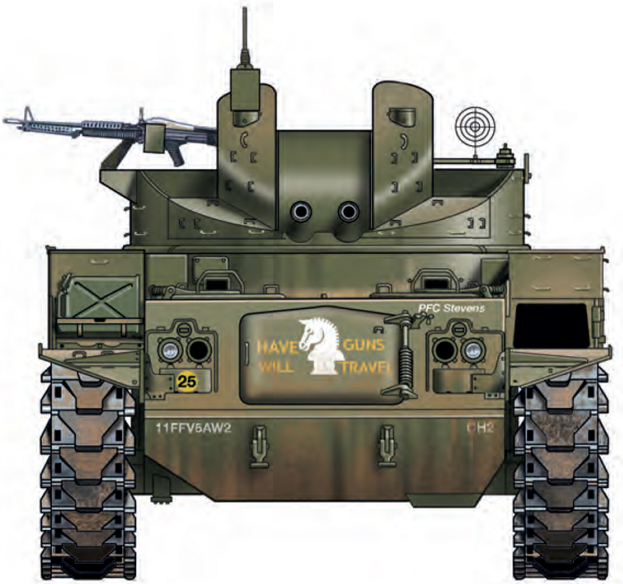
The exposed nature of the gun crew of an M42 is evident in this view of a vehicle making its way through thick brush. The squad leader, or commander, is sitting above his hatch, wearing a CVC helmet equipped with headphones and a microphone, so he can communicate with the crew and other elements. The driver has his head up through his hatch for better visibility. Two of four crewmen visible are in the gun mount. *Air Defense Artillery Museum*

M42s advance abreast through a defoliated thicket. The crewmen are wearing flak vests to give them a bit more protection in their exposed mounts. The unit markings on the M42 on the left identify it as D-131, belonging to 1st Platoon, 3rd Section, Delta Battery, 5th Battalion, 2nd Artillery. Note the different location of the stars on the rear decks of the two vehicles. *Air Defense Artillery Museum*

This M42, C241 of C-5/2nd ADA, has the typical stenciling of the 5/2nd, but the crew have increased their armament by replacing the normal M60 7.62 mm machine gun with the venerable and powerful "Ma Duce" M2 .50-caliber machine gun. *ADA historian Paul Kopsick*

Duster C242 of the 5/2nd ADA has the commonly used "Have Guns Will Travel" and "white knight" chess piece on its front door. It has the standard M60 machine gun on the right-side spindle. The ends of the barrels are covered over to keep out dirt. They have the square front mudguards, characteristic of early-production Dusters. *ADA historian Paul Kopsick*

This surprisingly clean M42 is emblazoned with numerous markings. The vehicle was with C Battery, 5th Battalion, 2nd Artillery, and was photographed in a sandbagged revetment in Vietnam a half mile from the Cambodian border. The name "Have Guns Will Travel" was a play on the title of a popular TV western. The surnames of the squad leader and driver, Sgt. Belle and Sp/4 Kirkendoll, respectively, are stenciled on the glacis. The crew names on the gun shield are obscured by glare. *National Archives*



This C Company, 5th Battalion, 2nd Artillery Duster was attached to the 3rd Battalion, 17th Air Cavalry, in April 1970.

These two Dusters belonged to Battery A, 5th Battalion, 2nd Artillery, in Vietnam. The front M42 has vehicular art on the front hull door: a white silhouette of a shapely woman with "DREAM–" lettered below it. A form-fitting waterproof cover is strapped over the gun mount, with openings in it allowing the radio antennas to remain in place. *Patton Museum*

"DREAM–" is viewed from a different angle. Two different styles of front mudguards are on this vehicle, both with squared fronts. The left mudguard has lateral ribs and a support and is of the style found on the T141, while the right mudguard appears to have been fabricated from smooth sheet metal. By contrast, the Duster to the rear has the later mudguards with the angled fronts. *Patton Museum*

The crews of these two Dusters from 5th Battalion, 2nd Artillery, are using a slave cable to start a reluctant M42A1. One end of the special heavy slave cable has been plugged into the slave receptacle of the Duster in the foreground, with the other end will be plugged into an identical receptacle on the other vehicle. This system is much easier and efficient than "jumper cables" used in civilian applications. The Duster in the background is towing an M332 ammunition trailer. *ADA historian Paul Kopsick*

With the iconic mist-shrouded Black Virgin Mountain in the background, a convoy passes in the opposite direction as men from a trio of M113 APCs develop a strategy for extracting this Duster from 5th Battalion, 2nd Artillery, from a roadside canal. An MP M151 is in the foreground, no doubt both for traffic control and to investigate the "accident." Recovering a 24-ton vehicle this deeply mired will be a challenge. *ADA historian Paul Kopsick*

Improvised explosive devices (IEDs) have been a threat to soldiers for decades, as is evidenced by this 5th Battalion, 2nd Artillery, M42A1 destroyed by such a device. The gaping hole beside the road in the foreground marks the spot where the device was placed. The tracks in the road indicate that the Duster did not trigger the mine itself, but rather it was likely command detonated. The blast appears to have blown the right-side road wheels and possibly punctured the gas tank, causing a fire that engulfed the entire vehicle. Ironically, the Duster is towing an M149 400-gallon water trailer. *ADA historian Paul Kopsick*

In early 1968, M42 Dusters of the 1st Battalion, 44th Artillery, engaged in street fighting during the Battle of Hue. These vehicles conducted hit-and-run attacks on enemy positions, darting out into a street, blasting the position with 40 mm fire, and retiring just as quickly. Here, one of the 1/44 Dusters makes its way along a street, with plentiful 40 mm rounds at the ready on the rim of the mount and the crewmen hunkered down in the open mount. *National Archives*

In a position called Duster Hill overlooking LZ Uplift, an M42, registration number 40228554, of 4th Battalion, 60th Artillery, rests in an emplacement that has been dug out of a hillside. For any artillery system to be effective, it is necessary to level the piece as accurately as possible. However, the M42 did not have a built-in mechanism for leveling the 40 mm gun mount. Thus, for accurate firing, especially indirect firing, it was necessary to park the vehicle on as level a piece of ground as possible. *National Archives*

Specialist 4th Class Larry G. Womack checks the oil of his M42 at LZ Willy during Operation Pershing in the An Lao valley in mid-July 1967. Womack was the driver of the vehicle. The pintle-mounted machine gun is carefully wrapped, and hanging over the side of the 40 mm gun mount is a flak jacket. At the far right is an infantry telephone box. Overhead pass a flight of helicopters. *National Archives*

A Duster situated in a perimeter defense emplacement bears an odd assortment of extra gear. In addition to two 5-gallon liquid containers strapped to the ammunition locker, a 55-gallon steel drum that has been cut in half is lying on the spare-track rack: a prize the crew may have picked up for use as a fire pit or wash tub. In view on the transmission cover are the boxes for the 3.5-inch rockets and the infantry telephone.

The crew of an M42 in Vietnam pose on the deck of their vehicle. The flash suppressors have been removed from the muzzles of the guns, and two C-ration boxes dated 1967 are strapped down next to a 5-gallon liquid container. The hinges of the lids of the ammunition locker are visible; these were fairly light-duty contrivances made of steel wire bent into rectangles and retained by hinge leaves on the lid and the side of the locker. *Air Defense Artillery Museum*

The sight of the gun mount of an M42 rising above its revetment would have given pause to NVA or Vietcong sappers contemplating assaulting the perimeter of a base camp. Stacked on the embankment to the front of the mount are the ubiquitous 40 mm ammunition storage containers.

Duster C-141, registration number 40228536, with the Battery C, 4th Battalion, 60th Artillery, works in cooperation with the 1st Platoon, D Company, 1st Battalion, 8th Infantry, during a search-and-sweep mission near Qui Nhon, Republic of Vietnam, on August 9, 1967. The vehicle retains one of the two boxes on the rear deck for M20 3.5-inch antitank rockets. A dustcover is arranged over the pintle-mounted machine gun on the rear of the 40 mm gun mount; the ammunition box is sticking out from under it. *National Archives*

In July 1967, during the middle period of Operation Pershing, an eleven-month-long search-and-destroy operation in the An Lao valley, 1Lt. Albert Carden indicates to a squad leader, Sp/4 Phillip A. Pettice, where he wants the M42A1 in the background to lay down a concentration of fire. The vehicle, registration number 40228536, belonged to Battery C, 4th Battalion, 60th Artillery. On the M42A1, the crewman with the helmet loads a 40 mm ammunition clip into the ready rack. A small Confederate flag is on the antenna. In Vietnam, mud was virtually omnipresent on vehicles in the field. A month later, Pettice would survive being blown from the TC hatch when C-142 hit a mine and he was pinned under the Duster in a rice paddy. *National Archives*

Lt. Albert Carden waves an M42 into a firing position at LZ Willy, adjacent to the entrance to the An Lao valley, during Operation Pershing on July 18 or 19, 1967. The driver was identified as Sp/4 Larry G. Womack. Mud obscures all the unit markings on the front of the hull. Lt. Carden would return for a second tour as a Cobra gunship pilot and be killed in action. *National Archives*

Two M42A1 twin 40 mm self-propelled automatic weapons (AW SP) of 140 Section of Charlie Battery, 4th BN, 60th ADA, roll into LZ Two Bits (Binh Dinh Province) on August 9, 1967. All hands seem to be wary, including the track commander (or squad leader) of the lead vehicle, who is standing up in his hatch, holding an M16 rifle and wearing a flak vest and combat vehicle crewman's (CVC) helmet. Note the different angles to the front mud skirts. All the crew from C-142, registration number 12D385, are in their combat positions while the C-141's cannoneers are riding outside the gun tub. *National Archives*

An M42A1, registration number 40228536, pulls into a perimeter-defense position at LZ Two Bits, near My Lai (4), Republic of Vietnam, on August 9, 1967. The vehicle was with C Battery, 4th Battalion, 60th Artillery. Bits of gear are strapped to footman loops on the ammunition locker. One of the crewmen has put his flak vest to good use as a seat cushion. The light-gray boxes to the left are storage chests for 40 mm ammunition. *National Archives*

Details of the housing on the front of the right gunner's shield for the antenna-matching unit necessary for the AN/VRC-46 radio are visible on this M42 photographed moving up to its assigned emplacement at LZ Willy during Operation Pershing in July 1967. On the track is a typically diverse crew (*left to right*): cannoneer SP4 Ralph Widener, holding his M16; standing in the TC hatch without a helmet is SSgt. Billy D. Titus; in the background wearing the helmet with goggles is cannoneer PFC Johnson; the driver is SP4 James Womack; sitting on the driver's hatch cover is Sgt. Carrol Flemister; behind him is PFC Richard Tyler in the gunner's position. *National Archives*

With helmets and flak jackets on, the crew of this Duster, registration number 12G205, are on alert at a newly excavated defensive position. The muzzles and automatic loaders of the guns, as well as the machine gun on the far side of the 40 mm gun mount, are well covered to keep dust out. A 40 mm ammunition storage container is sitting on the ground to the front of the hull. Lying on the roof of the hull next to the driver's hatch is a pair of binoculars, and several shaving kits and an empty C-ration box are among the piled-up tarps and equipment in the foreground. *Air Defense Artillery Museum*

An M42A1 crew is preparing to fire at a target in the lower terrain to the left. For such firing situations, the 40 mm guns could be depressed up to –5 degrees under manual operation, or –3 degrees under powered operation. All three doors of the ammunition locker are open, exhibiting their embossed ribbing, and several 40 mm clips are propped up in the locker for quick access. A full clip of four rounds of ammunition is visible in the automatic loader. The storage boxes for M20 3.5-inch rockets are visible on the rear of the M42 to the left. *Air Defense Artillery Museum*

While the twin Bofors of M42A1, registration number 12V291, are being fired at a target in the low ground ahead, one of the cannoneers is kneeling down to grab a 40 mm ammunition clip from the locker. The locker lid is leaning on a 5-gallon liquid container resting on the fender. In the area below the ammunition locker, to the rear of the spare 40 mm gun barrels is another 5-gallon liquid container resting on its side, with its handles visible. *Air Defense Artillery Museum*

The left cannoneer of a track with registration number 12P374 is retrieving a clip of 40 mm ammunition from the ready rack, while the right cannoneer is preparing to insert a clip into the automatic loader. Loading was accomplished by positioning the clip into the guides of the automatic loader and pushing the clip downward until the bottom round dropped into the loader tray. *Air Defense Artillery Museum*

A crewman peeks around a tent while an M42 sits in an adjacent revetment. Crewmen have tracked mud all over the lids of the ammunition lockers, and a waterproof cover protects the automatic loaders of the 40 mm guns from the dampness. Despite the stenciled location marked on the side of the gun mount, a canteen is lying next to the base of the antenna. Stacked on the other side of the vehicle are 40 mm ammunition containers. *Air Defense Artillery Museum*

A soldier in a flak vest (probably an M1955) hefts a 40 mm ammunition container in front of an M42. Various stenciling identifies the location for stowed gear. The latch handle on the inside of the front door makes a handy hanger for a combat jacket with an insignia for specialist 4th class. Also in view are the brush guard for the commander's periscope, tow hooks, and the left headlight array (*left to right*: the blackout marker lamp, service headlight, and blackout headlight) and brush guard. *National Archives*

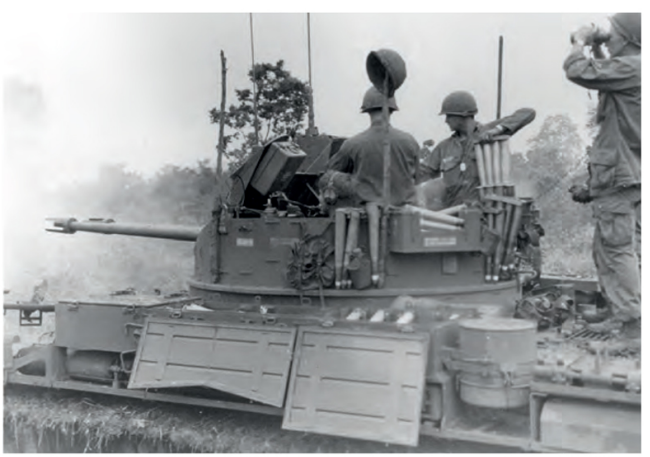
A combat photographer captured a view of track A242, registration number 40228633, of the 1st Battalion, 44th Artillery, passing a truck somewhere in Vietnam. Multiple 5-gallon liquid containers are stashed on both fenders, and an M60 machine gun on the pintle mount at the rear of the 40 mm gun mount is pointing straight at the photographer. The commander and a crewman in the gun mount are wearing CVC helmets, but an M1 helmet, possibly the commander's, is wedged against the rear of the right headlights. *Air Defense Artillery Museum*

An M42 crew conducts a sweep of the An Lao valley in April 1967, in support of the 1st Battalion, 7th Cavalry, of the 1st Cavalry Division in Operation Pershing. The vehicle's registration number on the front hull door was 40228544. Reinforced three-prong flash suppressors are affixed to the muzzles of the 40 mm guns. *National Archives*

At the airstrip at LZ Two Bits, an M42, registration number 40228536, was photographed on April 15, 1967, during Operation Pershing. The vehicle was with C Battery, 4th Battalion, 60th Artillery, attached to the 1st Cavalry Division. In the unit markings on the front of the hull, IFFV stands for I Field Force, Vietnam; 4 is the battalion; AW is automatic weapons; 60 is the regiment; C is the battery; and 141 is the vehicle number. *National Archives*

In order to alleviate some of the exposure to enemy fire of the crewman operating the M60 machine gun in the side pintle mount, an improvised shield was installed on this Duster. Visible over the left headlights is the bridge classification sign, signifying 23 tons. A water cooler, essential gear in hot, humid Vietnam, is on the front fender. *Patton Museum*

The crew of the same M42 shown in the preceding photo, registration number 40228594, tend to their vehicle at a motor park in Vietnam. Stowed on top of the improvised stake rack at the rear of the Duster are several 5-gallon liquid containers along with other equipment. The rear of the machine gun shield is visible to the left of the man standing to the right on the Duster. *Patton Museum*



The crew of this Duster of B Battery, 60th Artillery, are prepared for the sustained pounding of a target near the Cambodian border on August 14, 1967, with ready rounds arrayed around the rear of the gun mount and the ammunition locker lids swung open. The gunner has set his helmet on one of the wooden poles set up to hold a sunscreen, and is wearing headphones for intercommunications. The staff sergeant observing the weapons fire at the right is probably the vehicle commander / squad leader. To his right, and hidden except for one hand and a foot, is another crewman, who is linked by a coiled communications cable to the intercom. *Patton Museum*

This M42A1 from the 2nd Platoon, Battery B, 4th Battalion, 60th Artillery, was emplaced to guard a bridge between Camp Enari at Dak To and Kom Tum City, on March 27, 1968. Faintly visible are the hinges for the two-panel overhead door between the commander's and driver's hatches, marking this as an early-production vehicle. A US flag flies from the antenna for the AN/VRC-46 radio set. *National Archives*

An M42A1 fires on suspected enemy positions beyond the perimeter of Camp Enari, near Pleiku, Republic of Vietnam, on March 25, 1968. The Duster was with Battery D, 4th Battalion, 60th Artillery, assigned to the 4th Infantry Division. On the antenna is a blue flag with small stars. Visible on the right side of the transmission cover is the infantry telephone box. A small star insignia is at the center of the middle door of the equipment lockers. *National Archives*

A Duster from Bravo Battery, 4th BN, 60th Arty (B-242), stirs up dust on a road in a base camp in Vietnam. The area is fairly secure, and the crewmen are not wearing helmets or flak vests. An illegible inscription is painted in white letters on the front of the 40 mm gun mount. *US Army Transportation Museum*

Part of the escort for a convoy in the Republic of Vietnam is this M42 Duster assigned to C Battery, 1st Battalion, 44th Artillery (Automatic Weapon, Self-Propelled). A canvas dustcover is over the M60 machine gun on the right side of the mount. The shield over the twin 40 mm guns has a distinctive white stripe painted on it. Caked-on dirt and mud were the norm on vehicles in Vietnam; it was rare to see one in shiny, clean condition. This vehicle also has the early-style squared fenders at the front, as well as the overhead doors between the hatches. This Duster is marked with the USARV command designation (not IFFV or XXIV GP) 1AW44. *National Archives*

This compelling scene of Duster firepower was taken near Phu Tai in April 1970 by James Hensinger, who described the event this way: "We were taking Vietcong sniper fire from the mountain above us. For several nights in a row, the guy would stand up from behind a rock and blow off a clip from his AK47 on full auto. We decided to use a "heavy" response the next time(s) the sniper hit us. Our CO was able to get access to an unassigned M42A1 Duster sitting in storage near Qui Nhon." Hensinger shot several time exposures varying from fifteen seconds to one minute, including this one, which, in his words, "give testimony to the awesome firepower of the three 'Twin 40 MM' Duster Battalions that were deployed in Vietnam: 1/44th, 5/2d, and 4/60th ADA." *James Speed Hensinger, 173rd Airborne Brigade, April 1970*

Dusters are undergoing maintenance in the Alpha Battery, 5th Bn, 2nd Arty, motor pool, in 1970–71. The Duster to the left of the front row appears to have an ACAV-style armored shield added to the right-side machine gun mount. A power pack is sitting on the ground in front of the Duster to the right of the 2½-ton 6 × 6 truck. None of the 40 mm Bofors guns are fitted with flash suppressors. *Jack Ryan via NDQSA*

An M42 crosses a pontoon bridge next to a highway bridge that may not have been sturdy enough to bear the weight of armored or heavy vehicles. The markings at the top of the glacis are mostly hidden by gear. A skull is painted on the gun shield. In the foreground is a guard post evidently manned by ARVN troops. *Air Defense Artillery Museum*

At a gate through the wire around the perimeter of a base in Vietnam, an M42 has just started turning off the road, evidently upon return from a mission in support of infantry. The M60 machine gun is wrapped with a cover, and the 40 mm gun mount is traversed to the rear.

An M42A1 of the 4th Battalion, 60th Artillery, is in a strongpoint position commanding Route 14 in the An Khe Pass west of An Khe, Republic of Vietnam, on June 16, 1969. The 40 mm gun mount is traversed to the rear, and the lid of the forward ammunition locker is open. One of the crewmen is supplementing the 40 mm guns' fire by taking a shot with his M16 rifle. The squad leader appears to be on the radio. *National Archives*

Action is imminent as an M42 crew have stopped their vehicle and are preparing for a firefight. One crewman is crouching with his M16 rifle at the ready as others take up positions in the gun mount. The lids to the ammunition lockers are open, and ready clips of 40 mm ammunition are in place around the mount. The soldier to the right on the deck appears to be an infantryman who left his M16 leaning against the vehicle and is about to indicate to the gun crew where to direct their fire.

Crewmen of a Duster stand sentry in a perimeter defensive revetment. An M60 machine gun and ammo box are mounted on the side pintle mount. Only one radio antenna is mounted: the type AT-912/VRC, on an AB-719/VRC antenna base support. This antenna was linked to the AN/VRC-46 radio set, a radio/intercom system that included an RT-524/VRC FM transmitter-receiver for voice signals between vehicles. The antenna for the AN/GRR-5 shortwave receiver, which enabled the Duster to monitor communications, is not installed. *National Archives*

The crews of two M42 Dusters with the 5th Battalion, 2nd Artillery, pause for a break in a town in the Republic of Vietnam. The M42 to the front is US Army number 40228280, while the other one is 12D633. At first glance, it appears that a tow cable is strapped to the side of the ammunition compartments on the front M42, but a close inspection reveals that it is a flexible tubing or hose.

Behind a revetment topped with 40 mm ammunition containers sits an M42 from C Battery, 4th Battalion, 60th Artillery, at Fire Support Base Beaver, 12 kilometers northwest of Bong Song, on April 1, 1970. The visible crewmen were listed as, *left to right*, PFC Donald A. Hanshaw, azimuth tracker; Sgt. Thomas C. Blanford, squad leader / loader; and SP/4 Michael A. Tribur, gunner. "DANGER HIGH VOLTAGE" is hand-lettered on the right antenna mount. *National Archives*

Specialist 4th Class Floyd William of Baytown, Texas, buffs the inside of the front door of M42 Duster B-111 with the markings of Battery B, 4th Battalion, 60th Artillery, at Fire Support Base Blackhawk in September 1970. At least eighteen full clips of 40 mm ammunition can be seen hanging on the gun mount. The front hinges and the hold-open latch of the overhead hatch of the early M42 are visible at the top center of the glacis. *National Archives*

SP4 Theodore "Bill" Twardy (*left*) and SP4 Gerald Johnson (*right*), cannoneers, load four-round clips into the automatic loaders of the 40 mm guns of track B-232 "Twin 40s" while another crewman prepares to hand off another clip. This was late in 1971 at the firing range next to Dragon Mountain, south of Pleiku, where Camp Enari was once located. These are some of the last 40 mm Duster rounds fired by Americans in Vietnam. To load a clip into the gun, the cannoneer positioned the loaded clip into the guides of the automatic loader and then firmly pushed the clipped rounds down until the bottom cartridge dropped into the loader tray. *Richard Fejfar via National Dusters, Quads and Searchlights Association*

The Last Duster Battle: Dusters Fight Alone as Described by Paul Kopsick, B/4-60 ADA, 1971

On March 18, 1971, under the command of Capt. Herbert J. Trexler Jr., four Dusters from 1st Platoon, B Battery[,] 4th/60th[,] and the commander's APC entered the village of Ap Phu Quang (near the Ia Drang Valley) southwest of Pleiku.

For weeks, the NVA had been attacking firebases in the Central Highlands all along QL-14 on the border with Laos and Cambodia from Dak To in the north to below Phu Nhon in the south. FSB T. C. Miller at Phu Nhon had been effectively cut off for weeks and successfully staved off a major ground assault on March 15–16, in large part due to the two B/4/60th Duster crews and the 1/92nd Artillerymen defenders. At that time one Duster had a dead-lined engine and could not be moved and one of the guns on the other track could not be fired. Enemy sappers entered the ARVN part of the compound but were stopped in the wire outside the US portion by the Duster and artillery crews.

Ap Phu Quang was a small village north of Phu Nhon, and QL-14 ran right through the town so there were huts on both side of the road. The NVA had barricaded the road on both ends[,] making the village a defensive roadblock, even raising the NVA flag in defiance.

In an effort to bring much[-]needed ammo and gun parts to the beleaguered southern bases, a reaction force of four Dusters, five ammo trucks[,] and three Quad 50s trucks from E-41st (attached) tried to reach them. After several days of thwarted attempts by ARVN armored cavalry and infantry units, who lost many troops and two APCs to recoilless rifle in that village, the Duster strike force was given permission to try and [*sic*] run the gauntlet.

1st Platoon Leader, 1Lt. John Bailey IV, took the lead Duster into the village and the APC was in third position between the four Dusters. The Quad 50s were sent back at the last moment since they were less armored. The ARVN troops, following on foot, were supposed to follow on their flanks but could not keep up and barely made it into the village. So it was just some thirty men on four Dusters and an APC and a village full of entrenched and heavily armed NVA.

At the south end of the village right next to the burnt-out ARVN APCs, the column was attacked. First by small[-]arms fire from both sides of the road and then by whatever else they had; recoilless rifle, RPGs, machine guns[,] and rifles.

Within seconds[,] B-141, "The Kind Murph," the second track in the column was in flames and the driver and track commander were severely burned when a RPG pierced the internal 40 mm ammo well. The remaining vehicles returned fire with everything they had and, in the frenzy, had to breach the barricade on the southern end of the road and extract themselves and their wounded from the middle of the "kill zone."

Within minutes the southern half of the village was destroyed, and one Duster lay burning. All told[,] eleven men would receive wounds[,] with five being very severe requiring helicopter "Dust-Off" to the 14th Med Evac hospital in Pleiku.

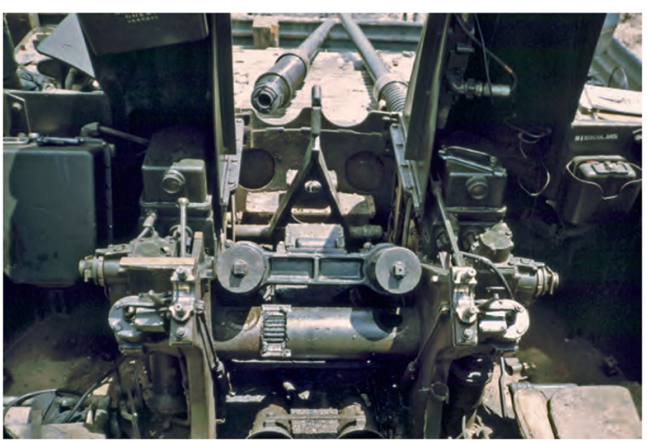
As a direct result of the actions of the Duster strike force, the NVA forces were either destroyed or routed from the village and the local region. These actions effectively ended the month-long siege of Phu Nhon and the enemy's post-Tet offensive neutralized.

I know of no other Duster battle that involved only four Dusters and no other supporting units. I do not know of any other instance when a unit's battery commander led his troops in an actual ground battle. Both Capt. Trexler and 1Lt. Bailey were awarded Silver Stars and every participant being awarded commensurate valor awards.

The charred remains of B-141, 4th Battalion, 60th Artillery, "the Kind Murph," sits on QL-14, where it was knocked out by an RPG on March 18, 1971. The vehicle had been part of a reaction force of four Dusters and an APC sent to take back the highway-straddling village of Ap Phu Quang from NVA control. Control of Ap Phu Quang effectively isolated US forces in Phu Nhon. Although B-141 was knocked out and eleven men were wounded, five severely, the Dusters had single-handedly broken the "siege" of Phu Nhon. *ADA historian Paul Kopsick*

The 2nd Platoon leader, 1Lt. Vincent Boyle (*left*), B-4/60 ADA, oversees crewmen preparing to pull an M21 40 mm dual automatic gun from an M42 Duster at a base camp near Kontum in 1971. The barrels, the recoil cylinders, and the trunnion caps securing the gun to the mount have been removed, the receivers have been elevated to 90 degrees, and the piece is ready to be hoisted free. *National Dusters, Quads and Searchlights Association*

The twin 40 mm gun receiver assembly has been pulled free from its mount. The battery's gun mechanic in the foreground has his hand on the elevating sector, which is not on the centerline of the bottom of the receivers but instead is centered on the bottom of the left receiver. *National Dusters, Quads and Searchlights Association*



With the 40 mm dual gun assembly removed, the inner parts of the Mount M4E1 are visible, as seen from the rear of the mount. Inside the mount are mechanisms for elevating, traversing, and firing the 40 mm guns. To the far left is the storage case for sight accessories, and to the far right is a holder for a binoculars case. In the background, lying on the rear deck of the vehicle, are the two 40 mm gun barrels. *National Dusters, Quads and Searchlights Association*

The crew of Duster A121 of A Battery, 5th Battalion, 2nd Artillery, dismounts. Written on the hull door is "Roaring Dusters Forties," while the names of the driver, PFC Shortnancy, and the squad leader, Sgt. Dunlap, are marked on the top of the glacis. A red tank that appears to be a fire extinguisher is secured with a clamp to the left fender. Note: For a while, an entire platoon of Dusters had Duster Roaring Forties stenciled on their doors. Similarly, at another time an entire platoon had the "white knight" chess piece and "Have Guns Will Travel" on their doors.

An M88 armored recovery vehicle is being used to position the remains of 5th Battalion, 2nd Artillery, track D121 (12B689), on an M172 trailer for transport first to a cannibalization point, and finally to Japan for overhaul. This was one of the few Dusters in Vietnam painted in a camouflage pattern. *ADA historian Paul Kopsick*

Duster C-231 of the 5th Battalion, 2nd Artillery, has lost its left drive sprocket and track, leaving it stranded in the mud. In 1970, the entire platoon adopted the "Have Guns Will Travel" artwork on the hull door, which was named after a popular western television series; the "white knight" paladin symbol referred to the main character of the show. The last name of SP/4 Thomas Robertson is painted to the front of the driver's hatch. Automatic loader lifting tools are hanging from below the rear machine-gun pintle. *National Dusters, Quads and Searchlights Association*

The first vehicle in a row of M42s, US Army number 40228158, of A Battery, 5th Battalion, 2nd Artillery, is undergoing repairs to its left compensating idler wheel and front road-wheel suspension. Two track pins and nuts sit atop one of the stacked road wheels in the foreground; lying on the tarpaulin in the right foreground is a long pry bar. Numerous machine-gun ammunition boxes are stored on the fender below the ammunition compartments, and a fuel transfer hose is strapped to the mount. All the Dusters in the line have the canvas turret cover attached. *National Dusters, Quads and Searchlights Association*

Near Pleiku, Republic of Vietnam; 2nd Platoon leader of B-4/60 ADA, 1LT Vincent Boyle, discusses with squad leader Sgt. John Korzek (*in wet fatigues*) on Duster B-232 how the brakes failed and it rolled down into a creek in June 1971. The vehicle had just been washed nearby. Following recovery of the vehicle will come the rigorous chore of thoroughly draining it, cleaning out mud, and restoring the electrical and mechanical systems. Barely visible on the top of the round oil filter and ductwork are the words "NO STEP" in white paint. Everyone who worked atop a Duster had to remember not to step on these fragile components. *National Dusters, Quads and Searchlights Association*

Squad leader Sgt. Duane Schewe walks by B-132 (registration number 12D987), "George of the Jungle," a 4th Battalion, 60th Artillery, M42 Duster in a sandbagged revetment at position 4, Weigt-Davis Fire Support Base, south of Pleiku, in June 1971. The mount is traversed to the rear, with the rear deck of the hull just visible above the sandbags; a barrel-cleaning staff lies on the deck. The forward parts of the 40 mm gun barrels appear dark, probably from a fresh coat of oil. Barrels were rarely painted, since the paint would burn off during firing and leave a residue. On the antenna are, *top to bottom*, a small US flag, a black memorial flag, and a yellow flag recognizing this vehicle's total of kills, fifty-eight. *National Dusters, Quads and Searchlights Association*

Several M42s on a firing line in Vietnam. A lawn chair is present on the second vehicle. The firing appears to be fast and furious, with the cannoneers keeping busy loading the guns from the stocks of ammunition stacked on the rear decks and clipped to the mount.

An M42 crewman takes a cigarette break in a makeshift hammock strung from steel fence stakes wedged into the side of US Army number 12C295 at a fire-support base in the Central Highlands of the Republic of Vietnam. Duster crews were on call day and night and got their rest whenever the opportunity happened. Atop the 40 mm ammunition storage compartment is a field phone. *National Dusters, Quads and Searchlights Association*

During mid-October 1971, a memorial service was held at Weigt-Davis base, south of Pleiku, Republic of Vietnam. This service was for PFC Gary Mizner (IL) of B Battery, 4th Battalion, 60th Artillery, who died on October 5, 1971, of the plague. He was the last known Duster casualty of the Vietnam War. He served on Duster B-131, "the Ones," seen here. Note the early square fender design and the straight T-bar steering handle. Later models would have a curved steering handle. The light-colored object on the base for the right headlights appears to be a Buick sticker, probably placed there by a fan of that company in the crew. *Richard Fejfar, BCO, via National Dusters, Quads and Searchlights Association*

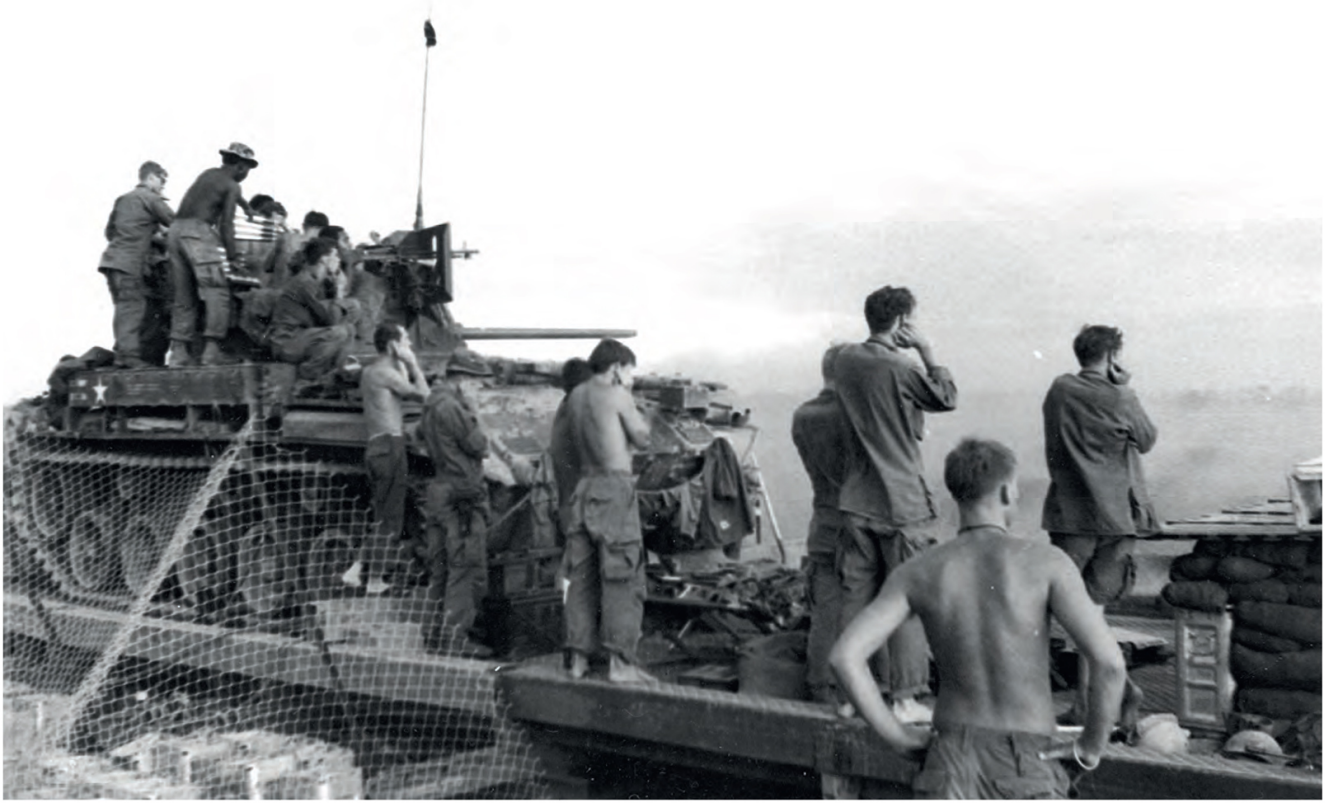
Members of the 1st Battalion, 44th Artillery, survey battle damage to an M42 Duster in Vietnam. The rear doors have been completely blown off the rear deck, and several louvered doors are askew. A badly damaged three-forked flash suppressor is present on the right 40 mm barrel, but no flash suppressor is present on the left barrel. Visible discoloration of the paint indicates that a significant fire had engulfed the vehicle. The right track is also missing, and there appears to be damage to the sprocket. *Larry Ross via National Dusters, Quads and Searchlights Association*

M-42 Duster C-131 of the 5th Battalion, 2nd Artillery, is on a landing craft at a river crossing in the Republic of Vietnam. The nickname "The Collector" is painted in Gothic script on the gun shield. Two Duster crewmen in flak vests are standing to the sides of the mount. In Vietnam, 5/2nd and 4/60th Dusters did perform actual firings from LCMs and even did actual test landings and recoveries back to the LCMs where feasible.

To provide fire support in otherwise impassible terrain around the Mekong delta, an M42 Duster is parked on a ponton raft. In this view as the raft was being loaded, troops are using a portable air compressor to add air to one of the pontons. *ADA historian Paul Kopsick*

The raft was created using portions of an M4T6 Ponton bridge. The walls of the M4E1 mount are covered with 40 mm ammo in clips, and additional boxes of ammunition sit on the deck of the raft as well as in at least two of the floats. While this may seem an abundance of ammunition, the 40 mms had a voracious appetite. *ADA historian Paul Kopsick*

The Duster-laden raft is being propelled by the landing craft, mechanized (LCM), to the right. The front and rear of the raft is heavily fortified with bunkers made of sandbags. Cyclone fencing for antirocket defense is rigged on the sides of the raft; the name "Buttercup" decorates the closer fencing. In the foreground are two PBRs (patrol boats, river). *ADA historian Paul Kopsick*

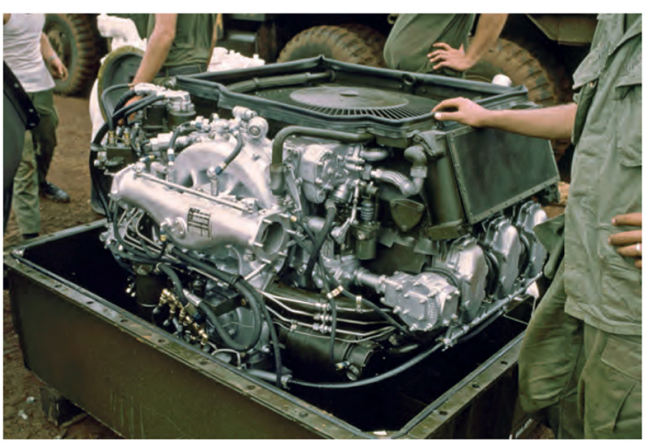


Men cover their ears as the M42 aboard "Buttercup" opens fire. Not only are the twin Bofors firing, but a crewman is manning the M60 as well. The onslaught of firepower being delivered no doubt was a most unwelcome surprise to the Vietcong on the receiving end. *ADA historian Paul Kopsick*

If ever a military site was aptly named, it was LZ Mud, north of Pleiku, Republic of Vietnam, in 1971, as the crew of this M42, B Battery, 4th Battalion, 60th Artillery, could attest. Torrential rains had inundated this landing zone, leaving the Duster deeply mired. The driver is seated in the vehicle, attempting to start the engine, but the chances of the vehicle exiting the morass under its own power appear to be slim.

An M42 Duster, B-111 of the 4th Battalion, 60th Artillery, US Army number 12B911, occupies a defensive position at LZ Action near Mang Yang Pass in mid-1971. The vehicle was backed into the revetment, for rapid egress if necessary. No flash suppressors and one antenna, tow cable, and cleaning rods are visible. Tarpaulins cover the guns, automatic loaders, and clips of 40 mm ammunition fastened to the rear of the mount. A metal clip extractor tool is draped across the mount rim just behind the lifting loop. Just beyond the M42 is an ammunition bunker, and in the right background are an ACAV M113 personnel carrier and an M48 tank with a xenon searchlight.

A wrecker crane is being employed to hoist the power pack of an M42 Duster by using a specially designed T-bar bracket that properly suspends the power pack. Track mechanic Sgt. Andy Hutchins of B-4/60th ADA, uses hand signals to guide the crane operator. Track squad leader Sgt. James Throckmorton observes from above. He sports an unofficial in-country made patch of 4/60th Dusters on his shirt pocket. The white transmission and the dark-colored engine were constructed so as to be able to be installed or removed as a single assembly. On the center of the side of the engine are three rocker valve covers; above them is the transmission oil cooler. On the right side of the engine, above the rocker valve covers, is the engine oil cooler. *National Dusters, Quads and Searchlights Association*



Replacement new and depot-overhauled engines were shipped in sealed, nitrogen-charged steel canisters. Such an engine is seen here, with the upper half of the canister lifted away in preparation of installing the engine in a 1st Platoon B-4/60th ADA Duster at Weigt-Davis engineer's compound south of Pleiku, Republic of Vietnam, during fall 1971. *Richard Fejfar, BCO, via National Dusters, Quads and Searchlights Association*

An M543-series wrecker crane has lifted the engine from its container, and it will soon be mated with the new transmission, which is resting on 40 mm ammunition containers. Visible in the lower half of the engine can are desiccant bags. *Richard Fejfar, BCO, via National Dusters, Quads and Searchlights Association*

A likeness of the Zig-Zag Man and the motto "Can Do" decorate the hull door of M42 Duster C-111, US Army number 12C295, of the 4th Battalion, 60th Artillery, at a camp in the Central Highlands of the Republic of Vietnam in mid-1971. A crewman takes a snooze on a folding cot in front of the Duster. Duster crews were on call 24-7 × 365, so getting any rest, even in the middle of the day, was important to the mission. An M16 rifle leans against the mount, and personal gear is in abundance on the vehicle. For the crew's comfort, several folding chairs are on the vehicle. *National Dusters, Quads and Searchlights Association*

The last remaining members of the 4/60th ADA are cleaning this M42 Duster (B-112, RN: 12C214) in December 1971, in preparation for turning it over to the ARVN. South Vietnam would maintain a Duster battalion of their own starting in 1972, using the remaining field-worthy tracks from the three deactivating Duster battalions. This vehicle has a red caution sign on the side of the antenna-matching unit, but it reads simply "HI/VOLTAGE." *National Dusters, Quads and Searchlights Association*

A soldier motions the driver of M42 B-111 of the 4th Battalion, 60th Artillery, aboard a trailer on the route to Lane Army Airfield in the Republic of Vietnam as the battalion prepares to deactivate in December 1971. With the exception of a muddy hull bottom, the M42 is in unusually clean condition for a Vietnam armored fighting vehicle (AFV), with the unit marking showing clearly. The tow hooks are painted white. *National Dusters, Quads and Searchlights Association*

After the Vietnam War, Dusters continued to serve for over a decade with the National Guard, as well as with the armed forces of several other nations. This example is painted in a MERDC (Mobility Equipment Research and Development Command) four-color camouflage scheme developed by the US Army in the early 1970s. Although this scheme largely comprises light colors, the white areas prescribed for snowy areas are not present. *Air Defense Artillery Museum*

This Duster is providing its final service to the nation, serving as a hard target on an Air Force gunnery range. The M42A1 exhibits the MERDC camouflage scheme commonly found on US military vehicles through the mid-1980s. Much of the paint is flaking off, exposing the underlying Olive Drab color. In addition, the tracks are rusty from neglect, and the rubber shoes of the tracks are severely deteriorated. *Department of Defense*

CHAPTER 3

The Duster in Detail

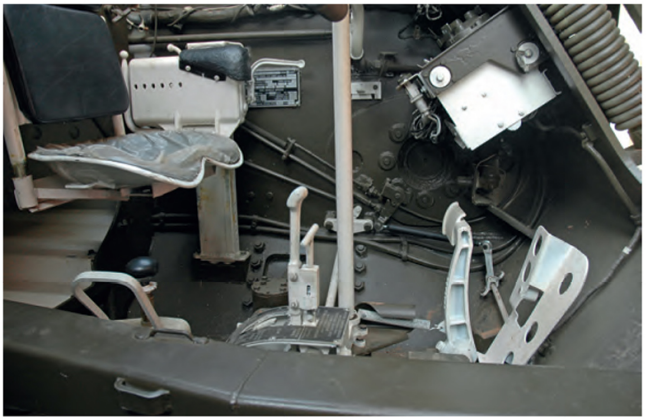
A number of M42 Dusters survive in the United States and several foreign countries. This beautifully restored example is owned and restored by the National Museum of Americans in Wartime. It is in a plain Olive Drab paint scheme and is marked with US Army registration number 12C126. Fitted on the 40 mm gun muzzles are three-pronged flash suppressors with a reinforcing band. *Scott Taylor*

With the hull door open, a glimpse into the interior of this restored M42A1 is available. On the far-right side of the opening, parts of the driver's seat and his curved steering-control crossbar are visible. The white, cross-shaped object toward the bottom of the opening is the range-selector control lever. The three-pronged flash suppressors on the 40 mm gun muzzles are the reinforced type.

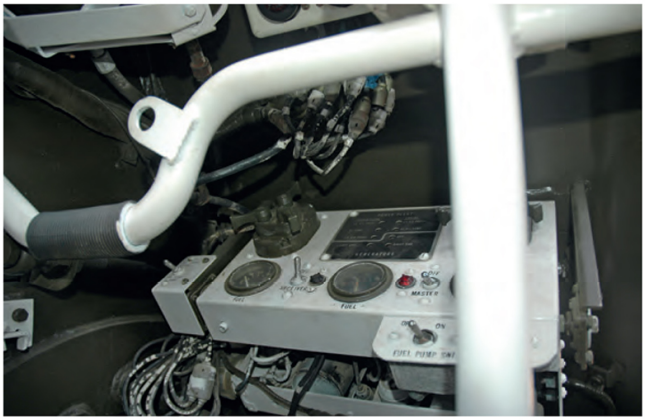
This front door of the hull is the late-production type, with a bracket for a flashlight, a .30-caliber ammunition stowage box, a large box for an M19 infrared periscope with a smaller box for a spare periscope head on it, and a bracket for an electrical diagram. These doors on early-production vehicles were less cluttered and lacked the periscope box.

Looking through the front door, to the right is the driver's seat, and to the left is the squad leader's seat. Dominating the rear of the driver's compartment is the personnel heater. The gasoline-burning heater, rated at 20,000 BTU per hour, is mounted on a support plate, below which are the exhaust tube, the fuel pump, and the fuel filter. Above the heater is a rack for storing four rockets for defensive use.

As seen through the front door of an M42A1, with the squad leader's seat to the left, an Olive Drab heater duct runs from the rear to the front of the compartment. A flex hose, missing here, connected the heater to the rear end of the heat duct. The white mechanism next to and below the rear of the heat duct is the parking-brake assembly. The white loop-shaped object above the duct is the guard for the primer pump handle.

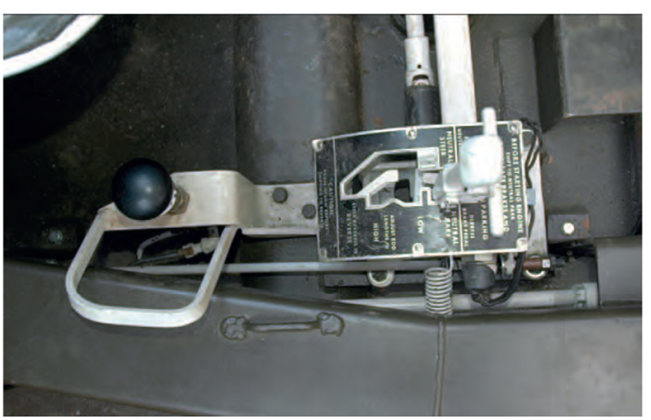


The driver's station of an M42A1 is viewed from the right side of the heat duct (*bottom*). The seat is mounted on a vertical support to its left side, allowing for the up-and-down movement of the seat. Also on the left side of the seat is an armrest and horizontal and vertical adjustment handles. The seat was designed to be swung out of the way to provide access to an ammunition-storage space to the rear. To the front of the seat's vertical support is the vehicle nameplate. At the center are the range selector and the steering column. To the lower right is the brake pedal and the perforated accelerator pedal, above which is the instrument panel.

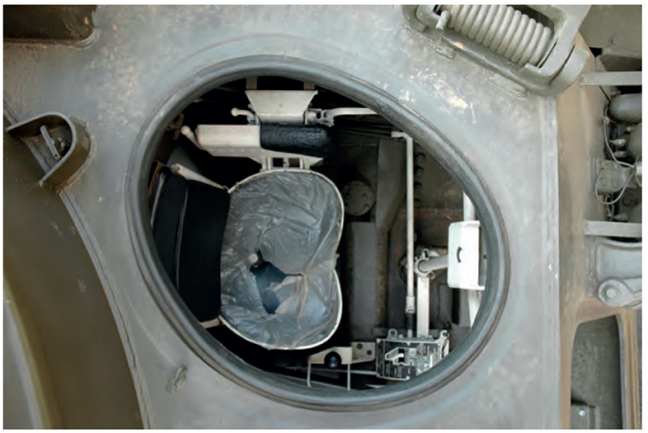


The instrument panel is seen with the steering control in the foreground. To the left of the panel is the blackout selector switch. On the top tier of the instrument panel are, *left to right*, the light switch assembly, the warning light panel, and (*hidden*) the starter, magneto, booster, and degasser switch assembly. The gauges on the bottom tier are, *left to right*, the left fuel tank gauge, right fuel tank gauge, and (*hidden by steering column*) engine-oil pressure gauge.

To the right is the bearing bracket on which the top of the steering control column pivots. Attached to the left side of the steering crossbar is the steering link. To the left of the bracket are the auxiliary generator and engine control box and a small panel holding the speedometer/odometer (*left*) and the tachometer (*right*). Partially visible above the speedometer is the driver's dome light.



The range-selector control box and handle are seen from above; the front of the hull is to the right. On the control box is a plate with instructions on the proper use of the selector. The range selector is used to set the driving ranges of the selective-gear trains, from high to low to reverse. To the rear of the selector is the primer pump handle and its loop-shaped guard.



The driver's station in an M42A1 is seen from above, with the front of the hull to the right. At the top right is the coil-spring assist for the hatch. To the left, behind a curved armor guard, is the external handle for the fixed interior fire extinguisher.

By comparison with the following photo of the solid roof above the driver's compartment, this image shows an early-production Duster with a front and a rear overhead door between the driver's and the squad leader's hatches. The purpose of this door was to facilitate handing 40 mm ammunition stored inside the hull, up to the 40 mm gum mount. The front panel was hinged at the front, and the rear panel at the rear, with the seam between the two panels running between the inboard parts of the two hatches.

A view of the roof of the driver's and squad leader's compartment, facing to the rear, illustrates the solid plate in lieu of overhead doors that was characteristic of the late-production Dusters. Surrounding the hatch openings are rubber weather seals with cutouts on the inboard portions, to provide clearance for the hatch locks. The upper hull plate of the later-production vehicles was plain armor plate, devoid of the levers and seam required in the early design.

As seen from the inside of an early Duster facing to the rear, the front and rear overhead doors between the top hatches were supported by a longitudinal bar, which also acted as a surface to which the two door latches were engaged. The support bar was pivot-mounted on its front end, allowing it to be swung out of the way when the door was opened. Below the rear overhead door are the driver's and commander's radio/intercom control boxes.

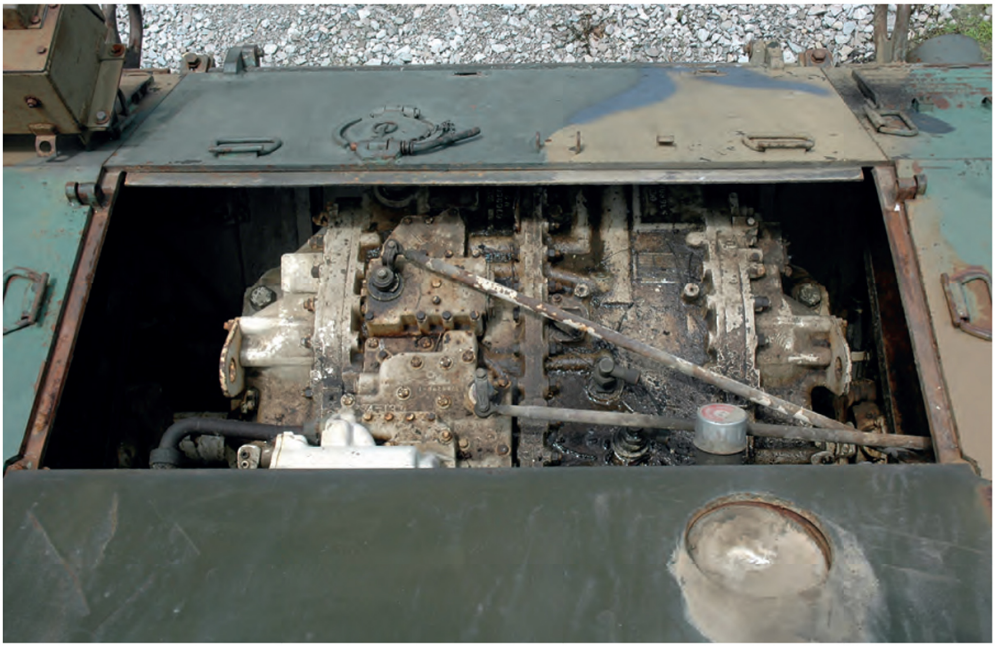
As seen through the front door of a Duster, the space in the hull to the rear of the driver's and squad leader's compartment comprised an interior storage space for 40 mm ammunition. Provisions for storing 12 standard metal cans for 40 mm ammunition, 16 rounds per can, were available in this space, and there were also provisions for storing an additional three cans between the driver's and squad leader's seats. The squad leader's seat could be folded, swiveled 90 degrees to the side, and its support tilted as seen here, to provide access to the ammunition cans on the right side of the space.

The squad leader's compartment is viewed facing right with the squad leader's seat is shown secured in its normal position. The seat could be raised and lowered on its support by using the curved handle on the outboard side of the seat. On the bottom rack are a speaker (*left*) and an amplifier power supply (*right*). The caution sign to the top relates to reinstalling drain-hole covers after draining water from the hull. The white object next to the M1 carbine is the oil-bath air filter for the auxiliary generator and engine.

As viewed through the front door of the hull, a gray-colored, sixteen-round, 40 mm ammunition can is in the storage space to the rear of the squad leader's seat, shown here tilted out of the way. There was one of these spaces, referred to as tunnels, on each side of the hull. Six cans of ammunition were stored in each tunnel.

The right ammunition-storage tunnel is shown empty of 40 mm ammunition cans. To the left of the sign indicating the location for storing rations is the air duct from the auxiliary generator and engine air cleaner to the auxiliary generator and engine in the rear of the hull. To the upper right is the personnel heater. At lower left can be seen the fuel tank selector for the left tank and right tank, both off.

The open access cover reveals the Allison CD-500-3 cross-drive transmission and its linkages. Visible are the high-range selector linkage (*foreground*) and the steer control rod (*background*).



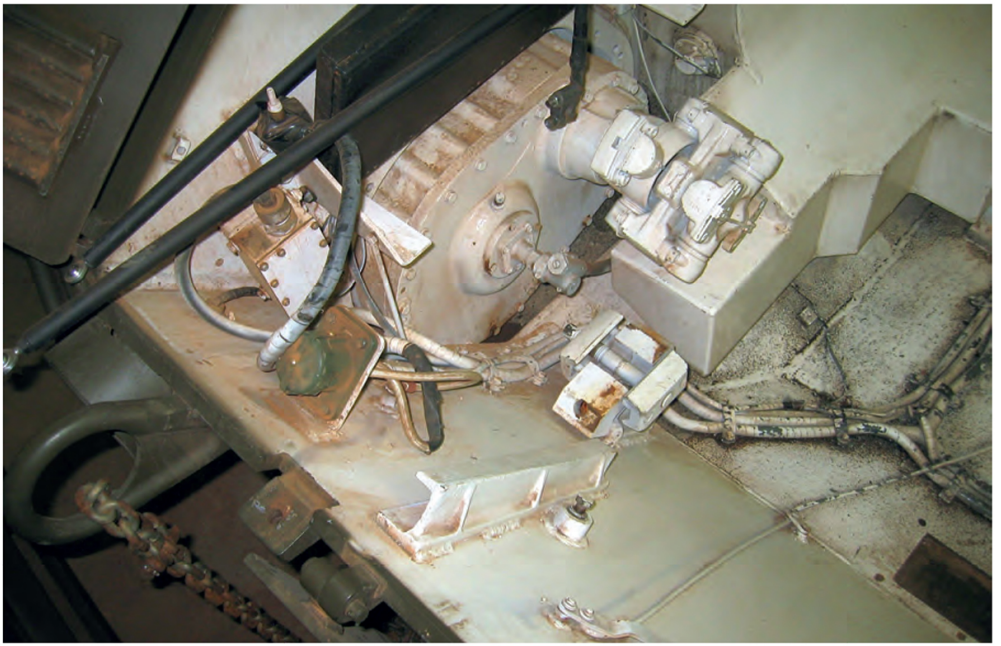
The APU was housed beneath the most forward grille on the right-hand side. The APU supplied power to operate the communication equipment and other accessories without requiring the running of the loud, expensive, and fuel-guzzling main engine. The APU could also be used to recharge the vehicle batteries if needed.

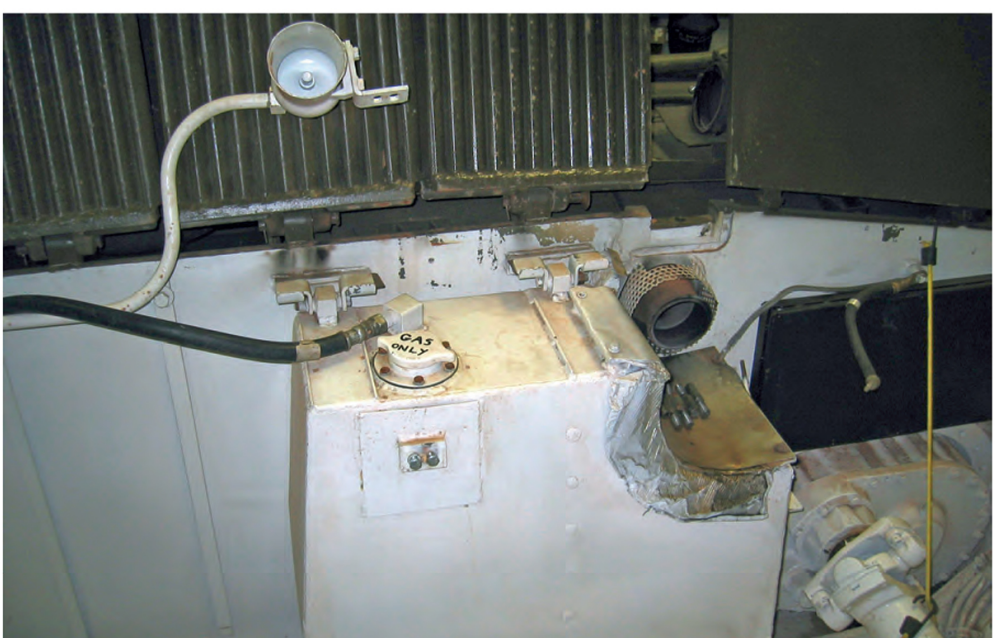
The large white object is the right-hand fuel tank; adjacent to it is the right-hand oil cooler. Although normally fueled in conjunction with the left-hand fuel tank through the armored filler, the right-hand fuel tank had its own fill tube that was accessible by opening the armored grille. This tube, along with a selector valve, allowed independent operation of the fuel tanks if needed.

In this view of a Duster engine compartment with the power pack removed, details of this space can be revealed. In the upper corners of the space are the large tubes leading to the air cleaners on each side. In either side in the middle of the space can be seen the irregularly shaped fuel tanks, and at the front, with the access panel removed, can be seen the integral fire-extinguisher bottles. The large hole is the engine oil drain, and the mechanism forward of that is the front mount of the power plant. *Paul Kopsick*

The forward portion of the left-hand fuel tank, with its filler above, is seen here. Just before the fuel filler pipe can be seen the left-hand engine air inlet pipe. The bell-shaped object at far left is a nozzle for the integral fire-extinguisher system. *Paul Kopsick*

Very large universal joints (*center*) were used to connect the transmission to the final drive (*far left*). Just forward of the lifting ring, but inside the engine compartment, can be seen the slave receptacle. This receptacle is accessible through the left battery access door. *Paul Kopsick*





The top of the right fuel tank is depicted, illustrating how it is contoured to wrap beneath the right-hand exhaust support. At the top of the photo is the right-hand fire-extinguisher nozzle, which is normally affixed just below the filler temporarily marked "gas only." *Paul Kopsick*

This vehicle has late-type headlight groups, characterized by a humped brush guard to provide clearance for a horn at the top of the right group and a blackout driving light at the top of the left group. Shown here is the right headlight group, comprising, *left to right*, a blackout marker lamp, a service headlight, and a blackout headlight. Missing is the horn above the headlights. Early-type headlight groups lacked the horn and the blackout driving light, and the tops of the brush guards were straight.

In a view of the upper right hull front and part of the 40 mm gun mount, the squad leader's hatch cover is closed, showing the periscope objective and its brush guard. Also on the hatch cover is a handle. Toward the left are an armored bin for .30-caliber ammunition, welded to the gun mount, and a stored 5-gallon liquid container.

The interior of the squad leader's open hatch cover is seen from the side, facing inboard. In the foreground is the lock handle. Beyond the lock is the periscope; either the M13 or M13B1 periscope was provided to the squad leader and the driver, with the driver also having an M19 infrared periscope for night driving. The periscope is mounted on a holder called the adapter, which allowed for rotating and tilting the periscope.

In a closer view of the squad leader's periscope, on the face of the adapter is a knob for securing the periscope in the adapter. On the side of the adapter is a small knob for locking the angle of the periscope, which had an elevation range of 25 degrees. On the turntable is a knurled knob for locking the azimuth of the periscope.

The squad leader's seat is seen through his open hatch. This is a late-production Duster, lacking the two overhead doors between the hatches. To the bottom right is the coil spring assist for the hatch cover. To the bottom left is the armored bin for carrying .30-caliber ammunition.

The squad leader's hatch is closed on an early-production Duster equipped with overhead doors between the two top hatches. To the right of the photo are the right hinge and the hold-open latch for the front overhead door. The design of the top of the periscope brush guard is shown. A small lifting ring is welded to the hinge arm of the hatch cover. *John Adams-Graf*

A restored M42A1 Duster is observed from the right side with the 40 mm gun mount traversed to the rear and the bow door and hatches open. The Duster had five sets of road wheels, or bogie wheels, per side. The suspension was of the torsion-bar type, and the torsion bar arms for the first two wheels and the rear wheel were fitted with shock absorbers. *Scott Taylor*

Above the right fender is a structure containing 40 mm ammunition compartments on top and storage compartments for tools and equipment on the bottom. On the side of the ammunition compartments is a tow cable, one eye of which is secured to a holder in the foreground. Farther to the rear on the side of the ammo compartment is a holder containing three sections of a bore-cleaning staff.

In a detail photo of the right storage compartments, the design of the tow-cable holders is visible at the upper center. Basically, they were a bent piece of steel that used the cable's weight to keep it in place. Above the cable are hinges for the forward ammunition storage compartment cover. Below the cable is the forward storage compartment door, with recessed T-shaped lock handles.

Red mud is caked on the right track of a Duster in a photo emphasizing the front track-support roller assembly, one of three on each side of the hull. These rollers were fitted with solid rubber tires, as were the road wheels. The mounting bracket for the track-support roller in the foreground has a steel guard that is welded to the hull, whereas the center roller's mounting bracket lacks this feature.

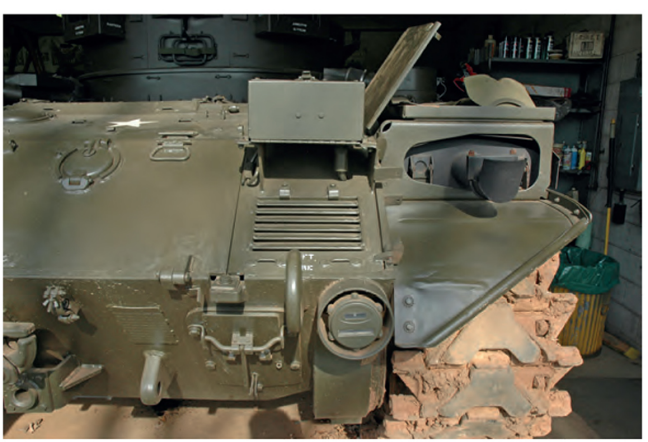
The bore-cleaning staff for the 40 mm guns is stowed in three sections on the side of the right ammunition compartments. The three sections screw together to form a single staff. Above the staff are two tow-cable holders. Above, on the side of the 40 mm gun mount, numerous footman loops are provided for attaching crew knapsacks. The bracket for the forward pintle mount for a machine gun is to the upper right. To the rear of the gun mount is a ready rack for clipped 40 mm ammunition, with a holder on the side for a canteen. The objects that look like grab handles on the ready rack are actually holders for a pouch containing asbestos mittens.

Above the right fender, between the muffler, *left*, and the rear of the stowage compartments, is the right oil-bath air filter, for purifying air before it is inducted into the carburetor. Stamped on the cup on the bottom of the filter is an oil-fill line. Next to the filter is a clamp that holds the tow-cable eye in place. A feature of the curved parts of the 40 mm gun shield was dimpling of the surface, faintly visible in this view at the top right.

The general arrangement of the right muffler, pioneer tool rack above the muffler, oil-bath air filter, drive sprocket, and other features is displayed in this view of an M42A1. The box inboard of the exhaust tailpipe is a telephone box that allowed troops outside the vehicle to communicate with crew or to access the vehicle's radio.

The right oil-bath air cleaner is seen close-up. It is attached with clamping bands to the plate at the rear of the storage compartments. The oil pan at the bottom of the filter is secured with a steel cable attached to a sprung latch, visible here. To the side of the air cleaner is the tow-cable clamp.

The mufflers of the Duster are enclosed in boxy heat shields with angled upper facets. The right one and the tailpipe (*far left*) are illustrated. Straddling the front and rear of the muffler are steel brackets that support the pioneer tool rack. The mattock handle and the shovel are visible from this angle. Mounted on the inboard side of the rack is the muffler for the auxiliary generator and engine.



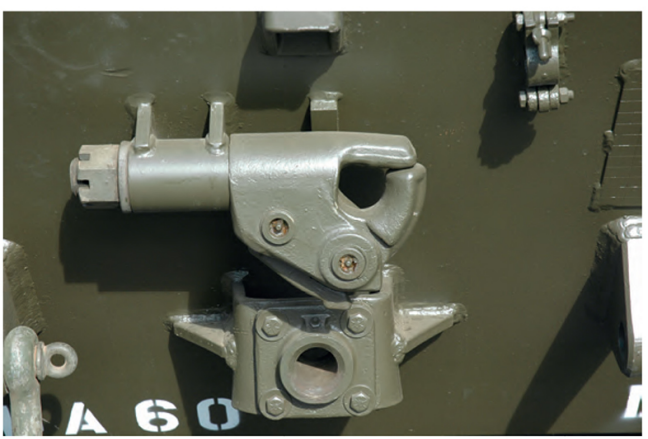
The pioneer tool rack, its rear bracket, and the muffler and tailpipe are seen from the rear. Attached to the tailpipe with a U-bolt clamp is an exhaust deflector that points upward. Next to the muffler is the exterior telephone and radio/intercom box. Details of the rear of the fender also are in view.

On the rear plate of the hull inboard of the right taillight and lifting eye is a plate with a small waterproof door on it, fitted with a locking mechanism. This was the access for two features: the original C-980/U intercom control for the use of support troops and personnel outside the vehicle, and the electrical connections for a towed trailer or for off-vehicle use. To the left are the stowed pintle hook and, below it, its mounting bracket.

The layout of the rear of the Duster is displayed with the 40 mm gun mount traversed to the rear. From this angle, the air ducts attached to the air cleaners are visible. Connected to each air cleaner are separate air inlet and outlet ducts. On the rear deck to the front of the lifting eyes is the transmission access door. To the right of center on the upper part of the cover is the door for the transmission oil filler. On each side of this door is a louvered battery-access door.

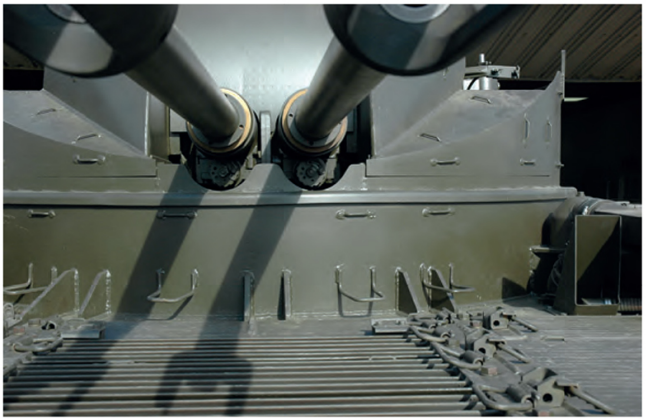
The door on the right rear of the hull for the intercom box and slave receptacle has two hinges on the bottom and is secured firmly in place by a latch comprising a handle and a lateral curved rod that engages a lug on the hull to each side of the door. To the lower right, inboard of the track, is the final drive adapter, with a plate containing the drain plug on the bottom of it.

Another detail shot of the rear of the hull shows the stowed pintle hook with, *below it*, its mounting bracket, and above and to the right the clamp-type holder for the pry bar. To the far-left side of the hull above the final-drive adapter is the holder for the business end of the pry bar.



The pintle hook is in its stored position, with its shaft secured in a cylindrical holder welded to the hull. The same locking nut and washer that would lock the pintle hook into its mounting bracket are used here to secure the hook in its holder.

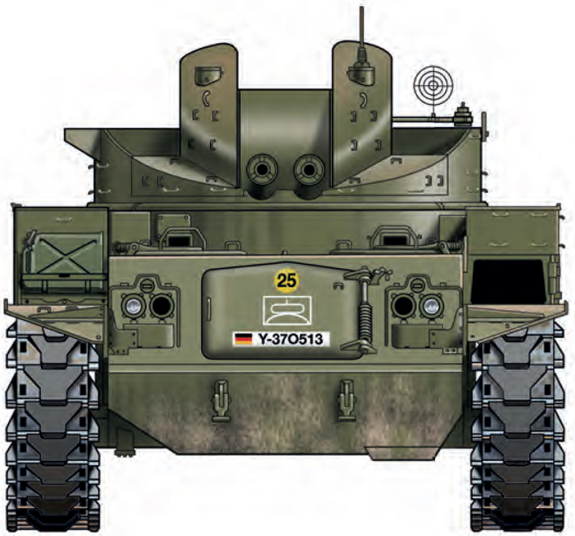
The left final-drive adapter is seen close-up, revealing the double weld beads on its inboard facet and the single weld bead that fastens the adapter to the rear of the hull. The final-drive adapter provided the necessary, armor-protected offset for installing the final-drive assembly.

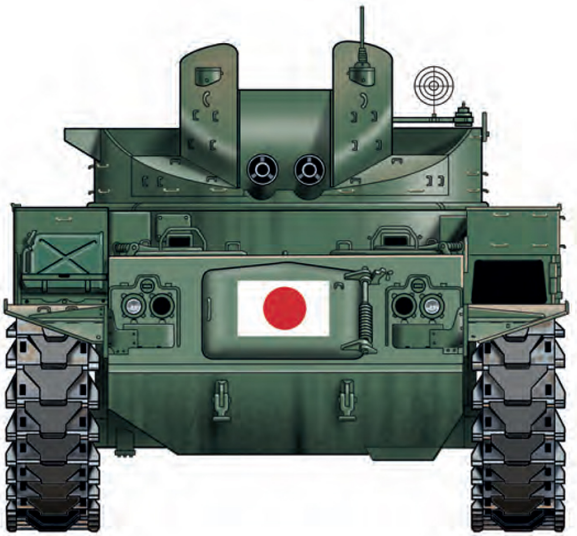


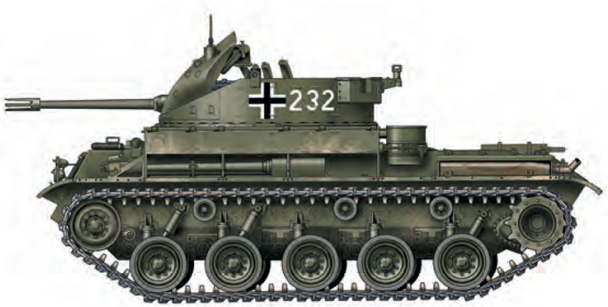
The M2A1 40 mm automatic dual gun and its M4E1 40 mm twin-gun mount are traversed to the rear, as viewed over the rear deck of a Duster. On the curved part of the hull below the gun shield and above the rear deck, the bent-rod brackets were for holding the rolled-up gun-mount cover, with straps attached to the brackets and to the footman loops securing the cover in place.

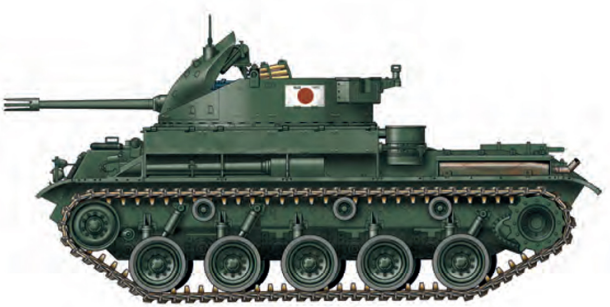
To the left is the left muffler, tailpipe, and exhaust deflector. On the tray above the left muffler were stored four spare track links, secured with brackets; a gun-barrel carrier tool; two track-connecting fixtures; and a drift pin for driving track pins from track assemblies. Farther forward, on the inboard side of the air cleaner, are the air inlet (*top*: squared shape) and air outlet (*bottom*: round shape) ducts.

The left taillight and lifting eye are shown. Both the taillights were housed in armored guards. The left taillight assembly comprised a service taillight and service stoplight over a blackout taillight. The right taillight assembly had a blackout stoplight over a blackout taillight. *John Adams-Graf*









This Duster was in service with the Federal German army in July 1973.

This Duster was stationed with the Japanese Self-Defense Force in Okinawa in 1970.

On another restored Duster seen from the left side, the manner in which four brackets hold the left 40 mm ammunition compartments well above the fender is apparent. In addition to the brackets at the front and the rear of the compartments, there are two more brackets in between.

The rear bracket of the left 40 mm ammunition compartments is seen from a closer perspective, showing how the bracket also forms the rear face of the rear ammo compartment. A 5-gallon liquid container is stored on its side below the compartment, to the rear of which is the left oil-bath air cleaner, muffler, and spare-tracks rack.

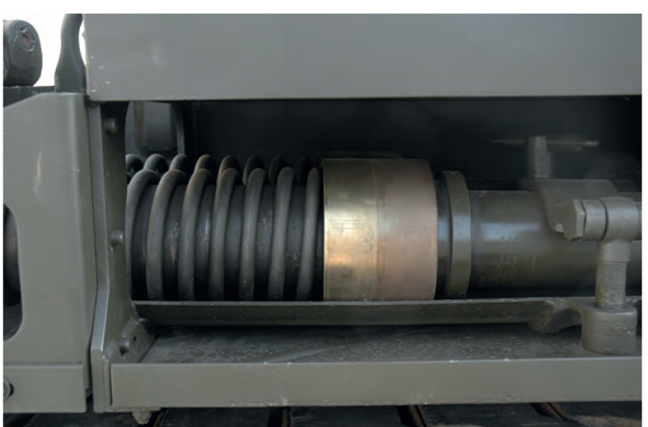
There are three ammunition compartments per side, each with a cover with two hinges on the outboard side made of heavy-gauge wire; three of the hinges are visible here. On the side of the 40 mm gun mount are ample footman loops for hanging crew combat packs; stencils mark the locations for stowing two packs and a canteen. Also in view is the left 40 mm ammo ready rack, with holders for a pouch for asbestos mittens, for handling hot barrels or spent cartridges.

In the space for storing spare 40 mm gun barrels are two muzzles with three-forked flash suppressors on them. These are late-type suppressors with a reinforcing rod around the forks. To the left is one of the support brackets for the ammunition compartments.

In a longer shot of a different Duster, the spare 40 mm gun muzzles are fitted with a type of plain, three-forked flash suppressor occasionally seen in photos of Dusters in the Vietnam War. The rack for the 5-gallon liquid container, with an angle-iron retainer on the front end and a webbing retainer strap, is shown.

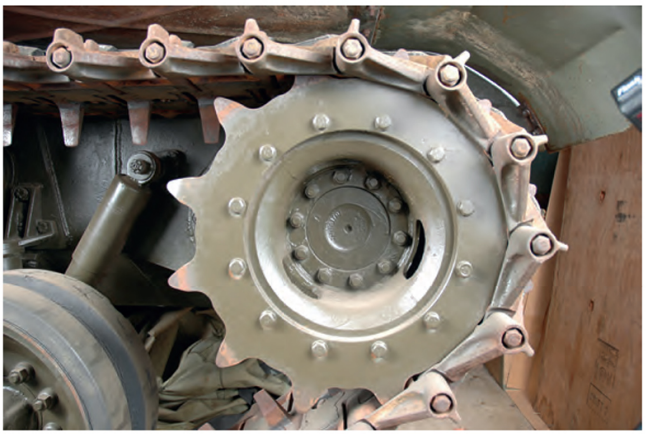
Footman loops are welded along the sides of the 40 mm ammunition compartments. On the fender below the compartments is a rack for two spare 40 mm gun barrels, in the shape of two troughs to conform to the shape of a barrel. Loops for webbing straps are on the rear part of the rack. Large, rounded openings in the two center support brackets for the ammo compartments provide clearance for the spare barrels. *John Adams-Graf*

Toward the forward part of the spare-barrels rack are two-barrel clamps. These comprise a toggling, curved clamp on one side of each of the troughs in the rack, and a T-shaped clamp nut on the other side. The chain acts as a retainer for the clamp nut.



Two 40 mm gun barrels are stored in the spare-barrels rack, rear ends toward the front of the rack, showing the recuperator springs and the brass-colored barrel guide sleeves. To the left, the forward support bracket for the 40 mm ammunition compartments has an opening in it to allow space for the spare barrels.

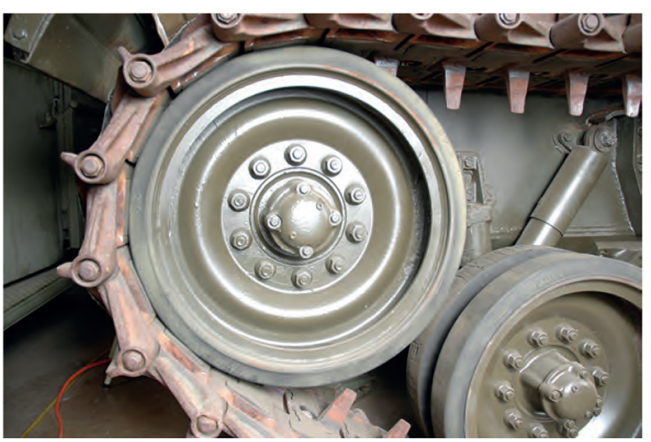
In addition to the straps on the muzzle ends of the spare gun barrels and the barrel clamps to the fronts of the recuperator springs, an end clamp for the breech ends of the spare barrels was provided. This consisted of a bar on a swivel mount with discs that fit against the muzzle ends of the barrels, and two screws with T-handles for tightening the clamp. Normally, a canvas cover was placed over the breech ends of the spare barrels before they were stored in the racks. Toward the left are the driver's hatch hold-down latch and the left front lifting eye.



The left drive sprocket assembly, like its mate on the right side of the Duster, consists of two sprockets mounted with twelve self-locking hex screws to a hub. The hub, in turn, is fastened to ten lugs on the final-drive output shaft with hex nuts. Three elongated lightening holes are present on the hub.

Five sets of dual road wheels are on each side of the Duster. Each is fastened to ten lugs on the hubs of a road-wheel supporting arm with ½-inch hex locknuts. Each wheel is fitted with a size 25½–4½ rubber tire.

Visible between the tires of the compensating (or idler) wheel to the left and the road wheel at the bottom is a mechanical link that connects the support arms of both sets of wheels in such a way that an upward movement of the road wheel translates to a forward movement of the compensating wheel, thus maintaining a steady track tension. Above the front road wheel assembly are, *left to right*, a bumper stop spring to limit the upward travel of the road-wheel arm, and a shock absorber for the front road wheel.



At the front of each track is a compensating wheel, or idler wheel, consisting of dual wheels mounted back to back. Like the road wheels and the track-support rollers, they are equipped with solid rubber tires and are the same size as those of the road wheels, 25½–4½.

A late-type left headlight group and brush guard are mounted on this Duster. It features a blackout driving light over, *left to right*, a blackout headlight, a service headlight, and a blackout marker lamp, with a brush guard with a bulge on top to give clearance to the blackout driving light. To the left is the counterbalancing spring that assists in opening and closing the front door.

The left headlight group is viewed from above. The light housings have rear and front elements that screw together to allow access to the lightbulbs. At the center of the photo, positioned above the right brace of the brush guard, is the lever for the hold-open lock for the front door, to keep the door from inadvertently slamming shut when open.

Like the squad leader's hatch cover discussed earlier, the driver's hatch cover is mounted on a arm connected to the hinge; on the hinge is a coil spring that acts as a counterbalance to make it easier to raise and lower the hatch cover. A lifting ring is welded to the hatch arm. On the hatch is a turntable with the periscope cover and brush guard.

The squad leader's hatch and open hatch cover are seen from above. Stored next to the hatch cover is a 5-gallon liquid container. Also in view are the tow cable, the bin for machine gun ammunition, and the right headlight group and brush guard.

"Twin 40s" cartoon art is painted on the movable part of the gun shield of this Duster. A lifting eye is indicated by a stencil on the left side of the shield, above which is a mounting point for a radio antenna. On the opposite side of the shield is a shield for a matching unit for another antenna. A subtle, recessed waffle pattern was a standard feature of the fixed gun shield.

The flash suppressors on this M42 preserved as a monument in Heber Springs, Arkansas, are of the early, conical type. Most World War II–era images of Bofors guns, whether land or sea based, show this type.

The type of three-forked flash suppressor with the reinforcing rod around it is fitted on these Duster twin 40s. The purpose of the flash suppressor was to prevent the crew from being temporarily blinded by muzzle flash during nighttime firing, and also to reduce the piece's visibility to the enemy.

The 40 mm gun barrels where they exit from the armored shield are shown in this view of the gun mount traversed to the rear. The recuperator springs around the barrels are enclosed in housings, but the brass-colored barrel-guide sleeves at the fronts of the recuperator springs are exposed.

In a view of the forward right portion of the 40 mm gun mount from the side, the pintle mount for a machine gun is at the center. Behind the pintle mount is a lifting eye. Rising above the pintle mount on the shield is the shield for an antenna-matching unit. To the left is an attachment point and stencil for a canteen.

In a view over the rear deck toward the gun mount with the twin 40 mm guns traversed to the front, to each side of the rear machine gun pintle is a lifting eye. Several 40 mm ammunition clips are in the left ready rack and draped over the gun mount.

Strapped to footman loops below the pintle mount are the two lifter implements that were used for removing the automatic loaders of the 40 mm guns for inspection, repairs, or replacement.

The front-right 40 mm ammunition compartment is viewed looking down with the hinged cover open. Inside are dividers for ten clips of ammo; at four rounds per clip, each of the six exterior 40 mm ammo compartments could hold forty rounds. To the front of the compartment (*left*) is a holder for a 5-gallon liquid container.

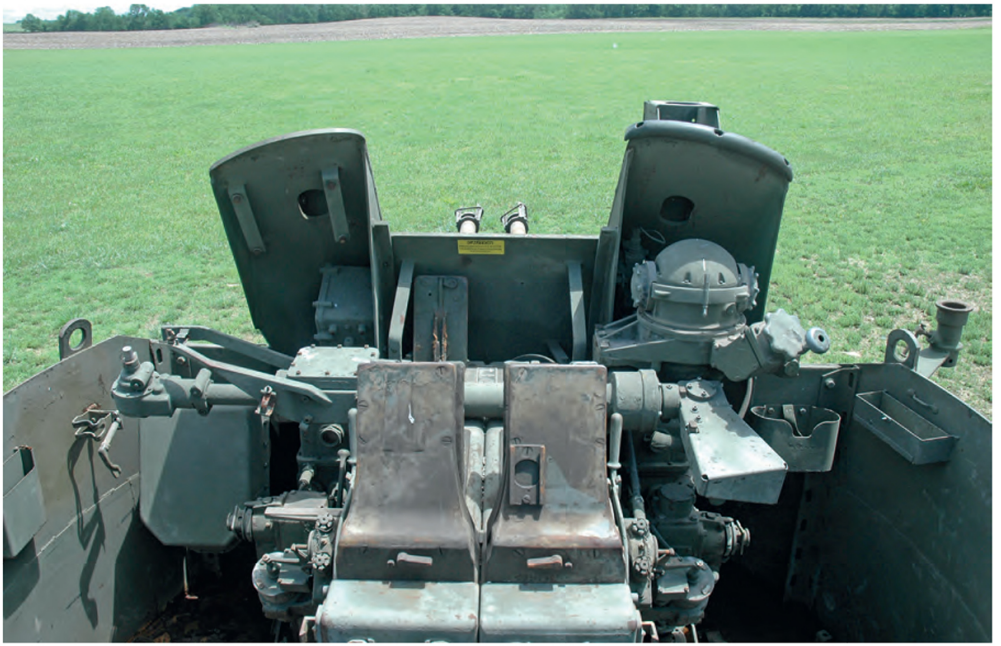
The Duster used five different types of Bofors ammunition. All were fed to the cannon in four-round clips such as this one.

The left ready rack for clipped 40 mm ammunition is seen close-up. The two ready racks were designed to hold two clips of ammunition. Also in view are the hanger for a canteen and the mounts for holding a pouch of asbestos mittens.

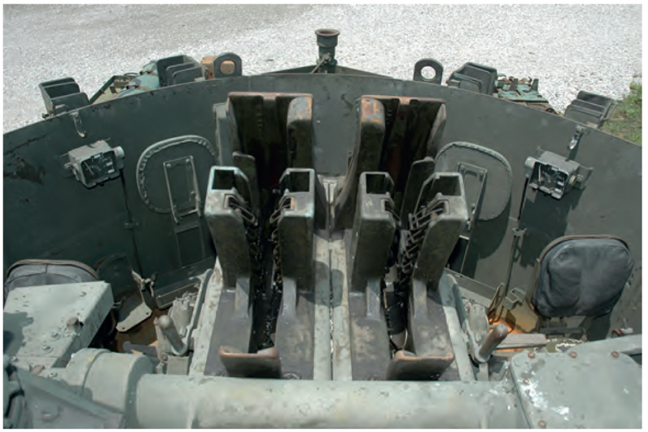
During a firefight, the four clips of 40 mm ammunition in the two ready racks would be expended very quickly, so crews tended to hang extra clips of ammo over the top of the gun mount tub.

As seen from the rear of the gun mount of a Duster, a traveling cover is installed over the M2A1 dual automatic 40 mm guns. The cover encloses the automatic loaders on top of the gun, and there are flaps for the ejector chutes at the rear of the guns. The seat backs for the gunner (*left*) and the lead setter (*right*; also called the azimuth tracker) are folded down, and hand cranks for manually elevating and traversing the guns are installed.

In a view of the 40 mm gun mount of a Duster from the rear, the automatic loaders are in the foreground. Normally, a sight accessories case was stored on the rear of the left side of the shield. The dome-shaped mechanism to the rear of the right side of the shield is the M38 computing sight. This sight was used when tracking aircraft or moving vehicles. The lead setter manually set estimated target course and speed into the computing sight, which then calculated a firing solution.

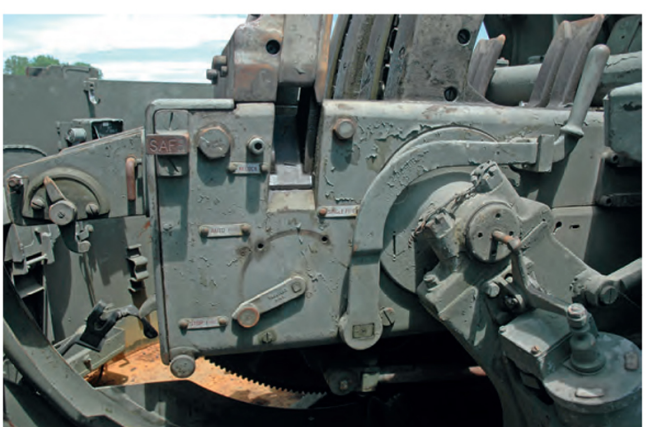


A Duster gun mount is viewed to the rear, with the automatic loaders of the 40 mm guns at the center. On the rear of the mount are folding seats for the two cannoneers. Outboard of each seat is an intercom control box for the respective cannoneer. The structure running across the bottom of the photo is part of the M38 computing-sight assembly and acts in part as a support for the computing-sight mechanism (*bottom left*) as well as the speed ring sights, peep sights, and the M24C reflex sight.



In another view facing to the rear in a gun mount, at the center of each of the automatic loaders are two raised structures that contain the feed pawls and the stop pawls. To the front and the rear of the loaders are raised guides. Part of the autoloader is housed within the gun and includes a loader tray and a rammer.

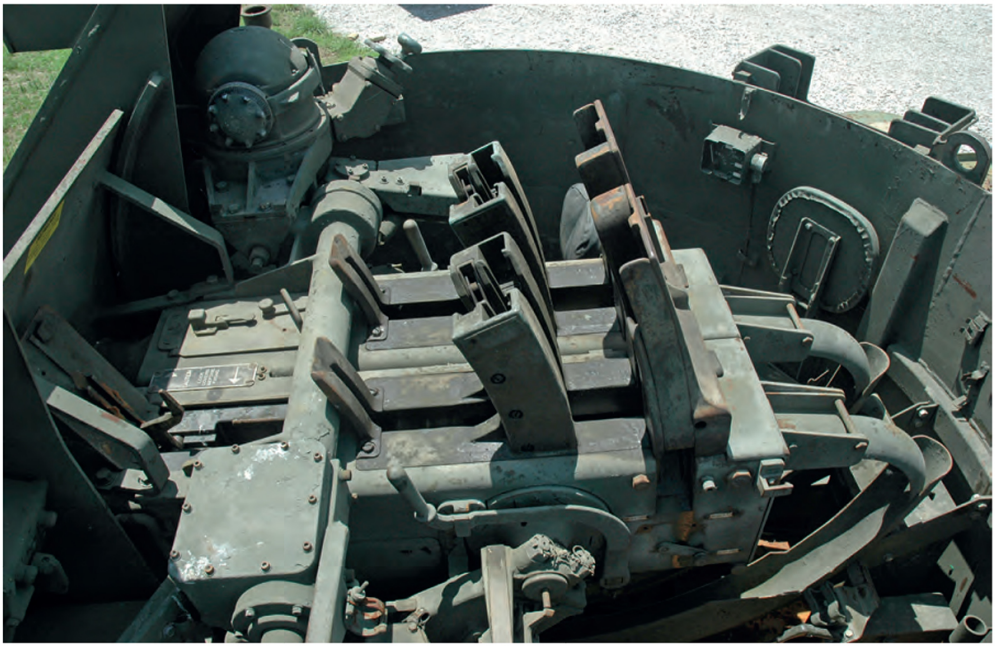
On each 40 mm gun, on the right mounting bracket for the spent-case deflector is a fixture that looks like a compass scale but is actually a recoil indicator. It displays the length of recoil and includes a curved scale and an indicator arm. This one is on the left gun.



The body or casing of the dual 40 mm gun to the rear of the barrels is referred to as the slide. The left half is designated the Mk. 1 and the right half is the Mk. 2. This view shows features on the Mk. 2 side. The curved handle on the right half of the photo is the right-hand operating lever, which is used to prepare the gun for firing. At the upper rear corner of the slide is a safety catch, for holding the hand-operating lever in the open position if desired.

At the upper front of the right shield of a Duster is an armored shield for an antenna-matching unit (not installed), a converter device. On top of this shield is a perforated plate for mounting an antenna base on. Bolted to the top of the right shield is a cushion, a standard fitting on the right shield but not the left shield.

A dual 40 mm gun mount is seen from the gunner's perspective. Below each of the spent-casing deflectors (*right*) is a curved chute for the spent casings. The mounting brackets for the movable shield at the front of the gun slide are visible toward the left, and the thickness of the shield can be seen.



The M38 computing gunsight in a Duster is observed from the right side. The dome houses the computer. To the far left is the computer-positioning handwheel, which rotates the computer in azimuth to match the estimated direction of flight of the target aircraft, to match the flight direction indicator on the bail above the dome. The round, black object with the studded face is the speed knob, for setting the estimated speed of the target. On the inner side of that knob is an angle-of-flight indicator.

The right interior of a gun mount is shown. The lead setter's seat back is folded down. A hand crank for manually traversing the mount is installed. On the other side of the mount, the gunner was equipped with a similar hand crank, but for manually elevating the guns. The dome-shaped object with a handle on the floor is the cover of the M27 azimuth indicator. Above it is the firing solenoid for the right gun.

The M38 computing gunsight is seen close-up from the rear. The black flight-direction indicator on the Olive Drab bail above the computer dome is visible, as is the small, red pointer for the angle-of-flight indicator on the inside of the speed knob. Below the computer is the traversing mechanism.

In the front right portion of the gun mount, to the left of the binoculars holder, is the traversing mechanism of the mount, designated the M6A1E1 azimuth oil gear. Oil gears that were controlled electrically powered the elevating and traversing mechanisms of the Duster's gun mount.

As viewed from above the lead setter's seat, directly above the azimuth indicator cover is the right trunnion and trunnion cap. To the side of the trunnion is the firing solenoid for the right gun. The traversing hand crank is inserted in the traversing mechanism.

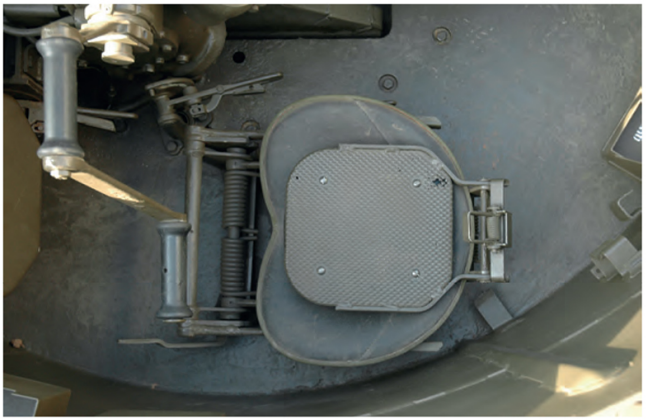
In a view to the right rear of the gun mount, which is traversed to the rear toward the driver's seat, are, *left to right*, a cartridge extractor tool, stowage space for a jimmy bar, and a shell pusher, for freeing jammed 40 mm rounds. On the floor next to the shell pusher is a box for grenades. Below each cannoneer's seat is a holder for a box of machine gun ammunition; the left one is visible here.

The tub of the gun mount comprises two stacked steel rings, welded together and reinforced with several stakes welded to the interior of the tub. The rear pintle mount for a machine gun is welded to three supports. Dangling from the pintle socket is a travel lock for a machine gun.

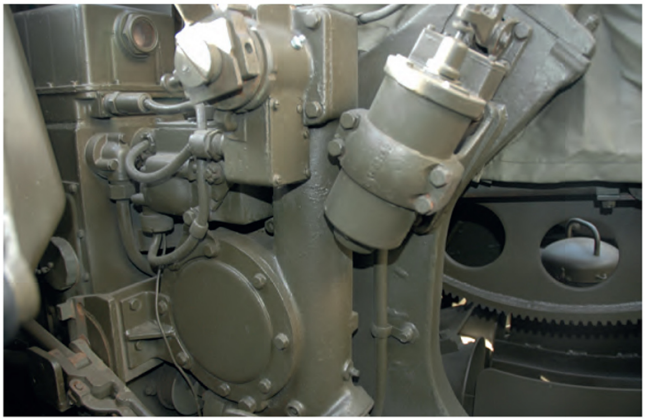
The cannoneer's seats are made of painted plywood with upholstering and are mounted on folding metal brackets. The left seat is shown. Adjacent to it is the left cannoneer's intercom control box. Above the box is a hook for hanging a telephone.

The back of the gunner's folded seat back has a nonslip surface so it can be stood on. On the tub of the gun mount are holders for a firing table and a gunner's quadrant. The large, box-shaped object to the front of the manual-elevating crank is the drive controller. When the guns were operated under power control, the gunner used handgrips on the drive controller to elevate, traverse, and fire the guns.

In an overhead view of the gunner's station, at the center of the photo to the front of the seat and the elevation hand crank is the left side of the M38 computing sight. The round object at the end of the shaft is the mount for the M24C reflex sight when used. When not in use, this sight was stored in the sight accessory chest at the top of the photo. The bar with the angled bend in it below that box is the open-sight bracket, which held the speed ring sight. The bent bar fastened to the M38 computing sight above the elevating hand crank is the mount for a peep sight.



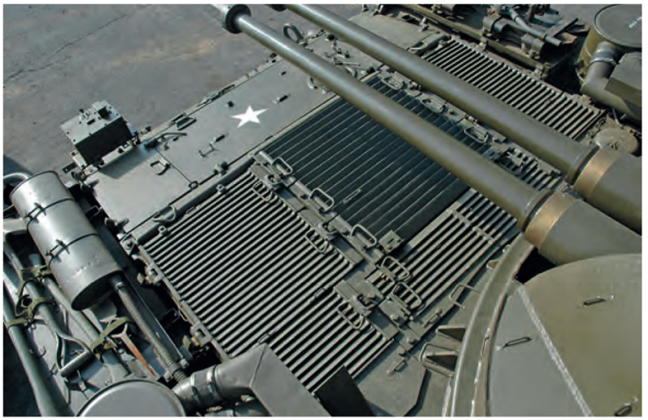
The gunner's seat, like the lead setter's seat, had a spring-loaded backrest and was adjustable horizontally and vertically to suit the size of the occupant. The lever on the left side of the seat base is for vertical adjustment. Bolted to the floor to the right of the seat base is the elevating lock for the 40 mm guns. It is in the locked position.



The elevating mechanism is next to the left side of the 40 mm gun carriage. At the upper center is the attachment point for the elevating hand crank for the manual elevation of the dual 40 mm guns. In the left half of the photo is the M6A1E1 elevation oil gear for the powered elevation of the guns.

A view from above the gunner's seat shows the relative positions of the sight accessory chest (*top center*), the left side of the M38 computing sight with the mount for the M24C reflex sight, the brackets for the ring sight and the peep sight, the elevating hand crank, the left firing solenoid (*bottom right*), and the M12E2 drive controller, below the ring-sight bracket. The drive controller is in the stored position; for use, the bottom end was swung upward, making the hand controls available to the gunner.

The speed ring sight is installed on its bracket, as viewed from the front of the mount. Whereas under power control the 40 mm gun mount was operated using the drive controller in conjunction with the M48 reflex sight, under manual control the guns were operated with the hand cranks in conjunction with the ring sights. The ring sight was attached to its bracket with the two wing nuts seen here.



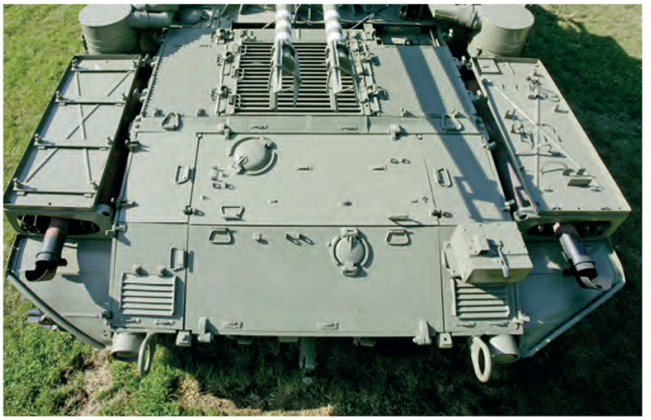
The rear deck of a Duster is viewed from above the right air cleaner, with the gun mount traversed to the rear. In the foreground are the three panels of the engine-compartment grille. The center panel lifted off, while the outer panels were hinged on their outboard sides. To the rear of the grille is the front transmission-access door (*center*), flanked by the two front battery-access doors.

The front right corner of the rear deck is viewed. A "NO STEP" stencil is on top of the air cleaner. At the center of the photo, to the front of the grille, is the exhaust shroud for the auxiliary generator and engine. Passing through the shroud en route to the small muffler on the pioneer tool rack is a flexible exhaust line.

From left to right above the rear part of the right fender are the air cleaner and its air ducts, the pioneer tool rack, and the auxiliary generator and engine muffler and tailpipe. Running into the muffler is the flexible metal exhaust line.

Secured with webbing straps in the pioneer tool rack are a standard complement of mattock head, mattock handle, shovel, and ax.

The top of the exterior telephone box on the rear deck is visible from this angle. Adjacent to it is a locking pin and retainer chain for the front transmission-access door. A good view is provided of a flash suppressor.



An overall view of the rear deck of a Duster shows details of the two storage trays above the mufflers, without any items secured to them. Except for the different brackets and fittings attached to them, the trays are essentially identical, with raised edges and raised X-shaped reinforcers embossed on them. On the front transmission-access door is a hinged cover for the engine oil filler; on the rear transmission-access door is a similar cover for the transmission oil filler. *Stuart Robinson*

The tray above the left muffler is loaded with four spare track links, a gun-barrel carrier tool, a pair of track-connecting fixtures, and a drift pin, used for driving track pins from track assemblies. To the rear of the tray is the left exhaust deflector. Note how the hinges of the engine grilles include stops to hold the grilles at a fixed angle when open.

In an overhead view of the front left corner of the rear deck of a Duster, at the center is the hinged, armored cover for the fuel filler. There was only one fuel filler on the Duster. Next to the fuel filler cover is the air-filter inlet duct over the air outlet duct. The air-filter ducts are not symmetrically arranged: the inlet ducts are identifiable by their boxy, welded designs, while the outlets are round tubes. Also in view is the cover for the left rear 40 mm ammunition compartment.

This beautifully restored example owned by the Americans in Wartime Experience shows off the general arrangement of the M42A1. Unlike the storage compartments of the right side, with 40 mm ammunition compartments located over compartments for tools and equipment, the left side of the vehicle featured 40 mm ammunition compartments above a space for stowing spare 40 mm gun barrels on the fender. *Scott Taylor*